APPLIED ECOLOGICAL SERVICES

CONSERVATION CONNECTS

BUFFALO NIAGARA RIVERKEEPER®

A Wildlife Survey of the Lower Buffalo River Area of Concern, Buffalo, Erie County, New York

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1. INTRODUCTION

The Buffalo River flows east-west through western New York prior to emptying into Lake Erie. As a major river system with a direct hydrologic and physical connection to the Great Lakes, its historic value as a rich natural resource for humans is well documented (Daloglu et al 2012, Sierszen et al 2012, Trebitz et al 2009). The great Seneca Nation of American Indians thrived in this landscape for centuries hunting, fishing, and gathering by seasonally moving through large tracts of riparian forest, managed meadows, expansive freshwater wetlands, and both riverine and lacustrine aquatic environments as seasonal harvest would dictate (Ganter 2009, Drewes and Silbernagel 2012, Ellis et al 2011).

Shortly following European settlement in the late 1700's, extensive logging, livestock management, and new agricultural practices imposed new ecological stressors to this environment and altered the socio-ecological system (Hristov 2012, Ireland and Booth 2012, Vadeboncoeur et al 2012). Robust industrial growth beginning in the late 1800's resulted in the re-shaping of the river's banks and significant, sustained deleterious impacts to both the terrestrial and aquatic ecosystems within the Lower Buffalo River. As a bustling metropolis, residential housing developments abut industrial development, leaving little space which is not graded, paved, or bulkheaded within the historic bounds of the Lower Buffalo River and its adjacent habitats. The decline of industrial manufacturing in the AOC has left numerous industrial sites abandoned which are now available for re-colonization by plants and animals to various degrees, generating an urban ecology setting. Under these conditions the Lower Buffalo River ecosystem exists today.

1.1. Project Background

The primary objective of this project is to develop a baseline assessment of the current abundance, diversity, and relative distribution of three vertebrate faunal assemblages (herpetofauna, avifauna, and mammals) within the Lower Buffalo River Area of Concern (AOC). The data collected, survey design and methods will aid in valuing ongoing and future efforts to improve ecosystem health within the AOC via comparative analysis.

The Buffalo River AOC, along with 42 other designated AOCs, was established due to the signing of the amended Great Lakes Water Quality Agreement (GLWQA) in 1987. This agreement engages both the USA and Canada in cooperative measures to protect water quality of the Great Lakes (usepa.gov). New amendments were singed into this agreement on September 7, 2012 related to ecological harm, climate change, nearshore environments and aquatic invasives (usepa.gov).

Under the Great Lakes Legacy Act (GLLA), a comprehensive approach to identifying, quantifying, and remediating ecological, toxicological, and sociological stressors to the contributing watersheds of the Great Lakes Ecosystem is supported. Remedial Action Plans (RAP) were generated for each designated AOC. The Buffalo River Remedial Action Plan (BRAP) (BNR 2008) calls out location-specific issues (i.e. contaminated sites) as well as resultant impairments to human and wildlife use within the AOC. The metrics for quantifying these issues are measured in Beneficial Use Impairments (BUIs) which detail particular overarching degradations within or upon ecological and sociological function. BUIs relevant to this project are #s 3 & 14, *Loss of Fish and Wildlife Populations* and *Loss of Fish and Wildlife Habitat*, respectively.

Delisting criteria[1] are as follows:

[1]Delisting criteria language from the International Joint Commission's website (www.ijc.org)

- For BUI #3 - *When environmental conditions support healthy, self-sustaining communities of desired fish and wildlife at predetermined levels of abundance that would be expected from the amount and quality of suitable physical, chemical and biological habitat present. An effort must be made to ensure that fish and wildlife objectives for Areas of Concern are consistent with Great Lakes ecosystem objectives and Great Lakes Fishery Commission fish community goals. Further, in the absence of community structure data, this use will be considered restored when fish and wildlife bioassays confirm no significant toxicity from water column or sediment contaminants.*
- For BUI #14 - *When the amount and quality of physical, chemical, and biological habitat required to meet fish and wildlife management goals have been achieved and protected.*

To date, millions of dollars have been invested in habitat and green infrastructure projects currently underway that promise to greatly restore the Buffalo River AOC's ecosystem. Included are significant shoreline restoration efforts supported by the GLLA.

Currently, no formal scientific data set exists to record the populations of birds, reptiles, amphibians, or mammals specifically within the Lower Buffalo River AOC. Some pre-existing data does exist for birds (BOC 2006, Crewe et al 2006), mammals (Makarewicz et al 1982) and herpetofauna (Crewe et al 2006), but much of it is anecdotal or designed with other intentions, providing no statistical strength to support trends in the Lower Buffalo River AOC terrestrial wildlife populations moving forward. This project has created a standardized and repeatable survey design to merit changes in wildlife populations over time within the Lower Buffalo River AOC, using peer-reviewed, scientifically valid data collection methods. Tied into the larger context, as ecological restoration and enhancement projects are implemented with the intention of delisting various BUIs, (alongside variables inherent with an urban ecosystem, such as industrial and residential development activity) this baseline data set will serve to compare any faunal responses to implemented habitat improvement efforts and may aid in determining locations and appropriate restoration activities within the AOC.

1.2 Project Area

Adhering with the boundaries of the Area of Concern, the project location spans 6.2 linear miles of the Lower Buffalo River (including the ship canal) and immediately adjacent terrestrial landscape (Appendix 1 - Map 1). In addition to the AOC, two survey locations (totaling 5 sampling points) were established to document faunal activity immediately east and west (Seneca Bluffs restoration site and coastal Lake Erie, respectively) of these bounds for comparative analysis and regional connectivity.

1.3 Quality Assurance Project Plan

In compliance with USEPA fund allocation requirements, a Quality Assurance Project Plan (QAPP) was generated for the project. The purpose of the QAPP is to help ensure that the data collected will be well documented and scientifically valid. Following two review and revision periods, the final approved QAPP for the Buffalo River AOC Wildlife Survey was approved on October 30, 2012 (Appendix II). This comprehensive project plan enabled funding sources (USEPA), regulatory bodies (USEPA, NYSDEC), grant administrators (BNR), and consultants (AES) to formally agree upon project-specific goals, review and approve methods for data collection and record keeping, and appropriate personal responsibilities for timely and efficient project execution.

2. METHODS AND MATERIALS

2.1 Survey Methods

A combination of peer-reviewed and scientifically valid field survey methods were employed to collect data on three vertebrate faunal assemblages (avifauna, herpetofauna, and mammals). Survey methods were selected to adequately sample target fauna while remaining within budgetary and temporal constraints. Another key factor in determining survey method selection and intensity of survey effort (i.e. number of sampling locations) was repeatability. This project is framed as a baseline biological assessment and has been designed with the expressed intention of achieving comparative analysis of collected biological data over time to develop a faunal performance metric in direct correlation with BUI #3. Sampling points were selected in stratified random fashion, ensuring adequate representation of all available habitat types for target fauna (Boitani and Fuller 2000). Stratifying sampling efforts by land cover with specific knowledge of target fauna natural history is proven to increase precision of population estimates (Thompson 2002). A total of 20 points were ultimately selected within the selected habitat types, 15 within the AOC (study area) and 5 within neighboring locations (reference area) (Map 2). In-river and in-lake aquatic habitats (benthic, pelagic, upper water column, etc.) were excluded from the scope of this project and were therefore excluded from survey point allocation efforts. However, target fauna observed at the surface of aquatic systems were documented (ex. loafing or foraging waterfowl, swimming mammals, basking turtles, etc.) and visual access to both the Buffalo River and coastal Lake Erie were intentionally incorporated.

In addition to representative sampling points, generalized comprehensive survey methods were employed as a supplement to each of the respective faunal search efforts. Selected search methods are not only cost-effective but are excellent methods for reflecting diversity and relative abundance (Tiebout 2003, Siegel and Doody 1996). During these surveys, observations of non-target fauna, primarily invertebrates, were also documented (see Section 3.5 Anecdotal Observations).

This wildlife survey represents year one (baseline data) of a multi-year survey effort designed to assess population trends (abundance, diversity, and distribution) in three vertebrate faunal assemblages within the Lower Buffalo River AOC over time. Subsequent execution of survey efforts to this extent are not within the scope of this project. Statistical power of the overall study will be determined by typical animal ecology constraints, primarily detection probabilities of target fauna, number of sample points, years of comparable data collected, and surveyor bias. Strict adherence to the original survey methods (described below), temporal and spatial execution (also described below), and adequate repetition of total survey effort over time will decrease controllable variability and, thusly, increase the probability of detecting actual population trends (Gibbs et al. 1998). To encourage adherence to the original survey methods for future surveyors, literature associated with various survey methods are hyperlinked within relevant sections (hold “Ctrl” and click on underlined links to access literature) and data sheets for re-use are found in Appendix III.

2.1a Habitat

General Habitat Characterization – Although not required, a general habitat characterization was completed at all survey points as part of the stratified random process. Characterizations were based upon Reschke 1990 and Edinger et al. 2002 (Document Link) to effectively classify vegetative strata and plant community types. Descriptions and associated photographs can be found in section 3a.Habitat Descriptions. The purpose of this exercise was to allow future observers to identify major changes in the ecological condition of survey locations which may correlate to changes in faunal activity over time.

Representative plant species are mentioned, but accurate documentation of floral species was not conducted (beyond the scope of project).

Phase I Bat Habitat Assessment – A qualified New York bat biologist visited the site and assessed the structural features (both biotic and abiotic) to determine the potential habitat available for resident and migratory bat species. Characterizations are related to structural and ecological life history requirements of the extant resident and migratory bat species in western New York (e.g. roost trees, water sources, foraging conditions, etc.).

2.1b Avifauna

Point Count Survey – Unlimited distance single-observer point counts were conducted at pre-determined survey locations (Map 2) following Ralph et al. 1995 (http://www.fs.fed.us/psw/publications/documents/wild/gtr149/gtr_149.html).

Counts were 5 minutes long during the breeding season and extended to 10 minutes during wintering and migratory seasons. Intervals of 0-3, 3-5, and 5-10 minutes were documented for future statistical power in data analysis. Data variables include direction from observer, behavior, height, flight pattern, and New York State Breeding Bird Atlas Code observations (http://www.dec.ny.gov/animals/7308.html).

2.1c Herpetofauna

Calling Anuran Survey – Calling amphibian surveys were conducted at each pre-determined sampling location (Appendix I, Map 3). This is an extremely valuable, non-intrusive, and cost-effective means of determining critical habitat, species diversity/richness, and loosely defined relative abundance estimates. Protocol followed nationally implemented methodology to provide maximum comparability to other and future data sets (Crewe et al. 2006; Weir and Mossman, 2005) (NAAMP Protocol Link). Essentially, this involves site visits during the anuran calling activity season in western New York (March-July) on warm, humid nights. Observers approached potential breeding pools and waited ~5 minutes for acclimation. The observer(s) then documented each species of anuran as identified by calling males. Relative abundance is estimated by the calling intensity of the chorus. Climatic and weather conditions are recorded, including wind speed, temperature, and precipitation.

BNR has actively engaged in the Marsh Monitoring Program (Crewe et al.2006). The methods used here coincide with the Marsh Monitoring Program's protocol, allowing for direct data comparison.

2.1d Mammals

Acoustic Bat Monitoring - Bat activity data were collected using broadband acoustic detectors (AnaBat SD-2 zero-crossing ultrasonic detectors, Titley Electronics Pty. Ltd., Ballina, NSW Australia). AnaBat detectors record the frequency of bat echolocation calls over time to compact flash cards (CF cards). Four detectors were deployed for a one night study on October 16, 2012. The AnaBat detectors were all located at or slightly above (<1 foot) ground level.

Deployment locations were selected based on a previous site assessment and bat habitat suitability. All detectors were located in different urban landscapes, with varying herbaceous cover types and percent of tree/shrub cover.

All microphones were positioned directly up to create the maximum zone of reception for collecting data. The detectors were powered by 4 – AA batteries. The detectors were turned on at deployment and were powered down when sampling concluded. Detector sensitivity was calibrated prior to field deployment according to Larson and Hayes (2000).

Bat acoustic monitoring data were downloaded after field investigations. Each data file was downloaded using a computer application program, *cfcread.exe*, designed for downloading and processing AnaBat data. Once the data were downloaded, they were transferred for later analysis to a folder with the site name, card number and date of download. Each card was given a specific number which correlated to the monitoring location and unit number.

Prior to summary and analysis, all irrelevant noise was eliminated from the data using filters in the AnaBat analysis program, Analook. The clean bat calls were placed in previously labeled bat call files with monitoring location, CF card number and date of download. We defined a bat call as a series of ≥2 echolocation calls with duration of ≥10 ms (Hayes 1997; Thomas 1988; Weller 2007). Each call file was visually inspected to determine whether it was a bat pass. Bat passes were then identified to species, comparing minimum frequency and call shape to a library of vocal signatures (O'Farrell et al. 1999). Unidentifiable calls were labeled as being produced by high (≥35 kHz) or low (<35 kHz) frequency echolocating bats, based on their minimum frequency. Voucher calls are reported in Appendix 2.

Sherman Live (small mammal) Trapping Survey – Small mammal traps can be effective for sampling small mammal populations in terrestrial landscapes (DeSa et al 2012). Clustered arrays of Sherman live traps (3"x3.5"x9" LFA Folding Trap) were positioned near onsite refuse piles, dirt mounds, and forest floors in 6 selected locations (Map 6) using pre-existing methods (DeBondi et al 2011, Eulinger and Burt 2011, and Williams and Braun 1983). Traps were pre-baited with a peanut butter/oatmeal mix and left open for one night prior to trapping to attract resident small mammals. Trap doors were then set and trapping occurred over two consecutive nights. Survey efforts occurred twice during the season (spring/summer and fall). Under NYSDEC law, this activity is regulated under a Scientific Collection Permit. Please refer to Appendix IV.

2.1e General

Time- and Area-Constrained Searches (TCS) – Using methods in Campbell and Christman 1982, Applied Ecological Services (AES) and Conservation Connects (CC) biologists targeted peak activity seasons and times of day to traverse pre-established spatial polygons throughout the AOC. After a rapid reconnaissance, polygons were strategically selected (Map 4) include onsite features which may be attractive to extant vertebrate wildlife, and/or expose key potential habitat, including basking structures, nesting mounds, surface cover (refuse piles and coarse woody debris), foraging habitat, and overwintering habitat for herpetofauna; burrows, middens, and scat/tracks for mammals; and pockets of migrant passerine in wood lots, old fields and wetlands. TCS was employed for all three target faunal assemblages and survey events targeted key activity periods and optimal climatic conditions within these periods for the appropriate group. Time-constrained searches are most useful for determining presence or absence of species and for providing initial data on the types of microhabitats occupied by individual species (Corn and Bury 1990)

Transect Searches – Walking and driving/road transects were established during the study design phase. These transects were walked/driven searching for any target fauna while noting opportunistically observed invertebrates as well. Due to site access limitations certain proposed walking transects were unable to be accessed. Walking transect search methods involved carefully and methodically advancing along pre-determined routes, searching for individuals or evidence of individuals within target faunal assemblages. Observers were allowed to leave the walking route to investigate potential observations and/or catch herpetofauna for confirming identification. To minimize bias, a specific assemblage was targeted each event (e.g. migratory birds in April, snakes and basking turtles in late June, mammal tracks in winter, etc.), but all vertebrate fauna observed during transect search events were documented, regardless of the intended target group.

Random Opportunistic Searches - This scientifically valid survey method is not limited by temporal or spatial constraints and is largely dependent upon the discretion of the observer. The observer may exploit unforeseen encounters with optimal basking locations, potential nesting grounds, surface concealment cover, or other structural habitat attractive to snakes, turtles, or amphibians while conducting other activities onsite. Additionally, when an observer encounters heightened bird activity, regardless of what duties are being performed, he/she may opportunistically document the observation. This search method is best employed by experienced field biologists, as a keen sense for changes in climatic conditions during certain seasons and times of day or other subtleties associated with the landscape are opportunities for this method to be successful.

Reference Site Selection – As part of the project a reference location was selected to compare study area faunal populations to. The selection of a reference location for this project proved difficult due to land use restrictions within the AOC (highly urbanized setting) and geographic distance to a comparable ecosystem which reflects true reference area conditions. "A reference site in the broadest sense is an ecosystem that serves as a model for restoring another ecosystem. This implies that:

> *(1) The reference site has more intact, autogenic ecological processes, higher functionality, more complex structure, and greater diversity than the system to be restored.*
>
> *(2) The biophysical site conditions of the reference site closely match those of the restoration site."*(excerpt from University of Washington memo hyperlinked below)

For additional information on reference siting in ecological restoration, please read this brief but informative memo prepared by the University of Washington (Reference Site Memo Link).

For highly degraded sites, such as the urbanized landscape within the Buffalo River AOC, a "true reference" location may not provide significant value since the gap between autogenic ecological processes and the restoration potential of the study area may be too great or set unrealistic restoration goals. For this reason, a reference location may be used more for suggestive, rather than prescriptive purposes. Remaining within the Lower Buffalo River watershed and finding a location which represents onsite habitats in an improved state drove the decision to use the ~34 acre Seneca Bluffs restoration site as the reference location for this project. Additionally, the Seneca Bluffs restoration site is the nearest area which has remnant native soils (39% Hamlin silt loam and 9% Fluviquents and Udifluvents, native floodplain alluvium soils) (http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx).

The selected reference area currently does not suffer from many of the ecological impairments within the AOC (invasive species are controlled, native plant diversity is maintained, the river exhibits a back channel/point bar, floodplain forest exhibits referencial structure, some native soils exist, an emergent marsh cove is present, and 'softer' edges to the river exist in general) and is within the same watershed. Since the management of invasive species does not constitute an autogenic ecological process, this reference location is not a true reference site, but can still aid in determining future AOC restoration activity.

The additional reference location, coastal Lake Erie, was chosen due to its hydrological connectivity to the AOC and its inherent influence on the site. Coastal Lake Erie was included to ensure that data associated with the lake edge was in the original data. While this doesn't represent onsite goals (no lake in the AOC), the Lower Buffalo River is intimately connected to the Lake and the animals that use it (in all seasons). Future restoration can be aided by understanding what animals move through the site that may directly benefit from river-associated restoration efforts (e.g. migrating and breeding waterfowl and raptors, nesting gulls and terns, wintering birds, riverine turtle re-colonization, etc.). All data associated with this reference location may or may not be included in future analysis, but our team found it important to have the data included within the baseline assessment.

2.2 Materials

Primary field investigation equipment is listed below. Specialized equipment (such as Sherman live traps and Acoustic monitoring equipment) is detailed within the above sections:

- 10.5 x roof prism Kowa Series Binoculars
- 60 x Optical Zoom Kowa TSN Spotting Telescope and Manfrotto Tripod (for TCS and Transects)
- Thermo hygrometer (Digital Temperature and Relative Humidity Gauge)
- Relevant Field Data Sheets and Metal Case Clipboard
- Field Observation Notebook
- Digital Camera
- GPS Unit
- Brimmed Hat, Pants, & Long Sleeves
- Sturdy ¾ Boots
- Bug Spray, Sunscreen and Other Personal Protective Equipment
- Letter of Permission/Intent to Collect Scientific Data (Provided by BNR)
- NYSDEC Scientific Permit (during Sherman Trapping Events)
- Water, Protein Snacks
- Cell Phone (with Local/Relevant Emergency and Project Contact Sheet)
- Site Navigation Maps and Relevant Field Identification Guides

3. RESULTS

The following sub-sections provide survey locations, summary data and comparative analysis of the collected data per faunal assemblage (Avifauna, Herpetofauna, Mammals, and Anecdotal).

3.1 Habitat Descriptions

A total of 20 sites were selected (15 onsite, 5 offsite). Table 1 briefly describes each survey point location. More information on the various habitat types which were observed present within the AOC are detailed thereafter. Rows highlighted in purple are defined as reference areas, rows in white (no color) are within the AOC (study area), and rows highlighted in gray were removed/merged with data from another point location. Due to the relatively small patch sizes of all naturalized locations within the AOC, the documentation of primary, secondary and, sometimes tertiary habitats are noted.

The survey point ID codes correlate to all original data sheets and are used to refer to observational notes within the report body. Common names for site locations are included in the notes column. Please use Table 1 as a reference for site ID, name, and habitat type correlation while reviewing this report.

Table 1. Point Count Site Location Descriptions

Survey Point ID	GPS #	Latitude (Northing)	Longitude (Westing)	Dominant Habitat Type	Secondary Habitat Type(s)	Notes
BUF101	54	42 52.066	78 52.944	Open Water (Lake)	Grassland (short)/ Developed (industrial)	Coastal Lake Erie Off of Fuhrman Blvd.
BUF102	55	42 51.918	78 52.626	Grassland (short)	Open Woodland/ Developed (industrial)	Field Near Coastal Lake Erie Off of Fuhrman Blvd.
BUF103	56	42 51.559	78 52.165	Open Water (Ship Canal)	Hedgerow/Developed (industrial)	Ship Canal Head (access via underpass)
BUF104	57	42 51.973	78 52.104	Riparian Woodland (park)	Open Water (River)/ Developed (industrial)	Buffalo River - Ohio St Public Fishing Access
BUF105	58	42 52.289	78 52.178	Old Field (shrub)	Developed (industrial)	Miami Street Abandoned Lot
BUF106	59	42 51.981	78 51.333	Riparian Forest	Developed (residential)	Woods east of Katherine and O'Connell Streets
BUF107	60	42 51.386	78 51.561	Riparian Forest	Developed (industrial)/ Old Field	End of Katherine St (**Merged with BUF 109**)
BUF108	61	42 51.431	78 51.357	Riparian Forest	Old Field (grassland tall)/ Open Water (river)	Katherine Street Peninsula SE
BUF109	62	42 51.437	78 51.478	Old Field (grassland tall)	Riparian Forest/ Developed (industrial)	Katherine Street Peninsula SC
BUF110	63	42 51.820	78 51.102	Open Woodland	Wetland (Pond)/ Open Water (river)/ Riparian	End of Smith Street Park
BUF111	64	42 51.478	78 50.242	Open Woodland	Developed (residential)/ Grassland (short)	North of Abbey St along Riverbend Fence (**Merged with BUF 120**)
BUF112	65	42 51.596	78 49.805	Riparian Forest	Open Water (river)/ Developed (residential)	Bailey Woods Payson Ave behind Shopping Center on Fishing Trail
BUF113	66	42 51.674	78 49.581	Riparian Forest	Open Water (river)/ Developed (commercial)	Bailey Peninsula. Park at Top Knotch Auto (Scott)
BUF114	67	42 51.626	78 49.501	Open Water (river)	Developed (commercial)/ Riparian Forest (edge)	Bailey Street Bridge Across Street from BUF113
BUF115	68	42 51.824	78 49.216	Open Woodland	Open Water (river)/Developed (residential)	Seneca Bluffs Entrance Meadow/Woodland
BUF116	69	42 51.936	78 49.167	Old Field (tall, managed)	Riparian Forest/Open Water (river)	Seneca Bluffs Tip

BUF117	70	42 51.929	78 49.024	Riparian Forest	Floodplain Wetland/Old Field (grassland tall)/ Open Water (river)	Seneca Bluffs SE
BUF118	71	42 51.854	78 49.094	Old Field (grassland tall)	Successional Upland Forest	Seneca Bluffs S
BUF 119	110	42.51.377	78.50.086	Old Field (successional upland forest)	Riparian Forest/ Open Water	Porkpie
BUF 120	107	42.51.298	78.50.201	Old Field (grassland tall)	Successional Upland Forest Emergent Wetland	Riverbend S
BUF 121	108	42.51.232	78.50.340	Old Field (grassland short)	Open Water	Riverbend W
BUF 122	109	42.51.377	78.50.393	Old Field (grassland short)	Open Water	Riverbend E
Purple = Reference Sites (off site) **Gray** = Locations Removed or Merged (see notes) **White** – Study Area (on site)						

3.1a Old Field – Old fields are previously cleared areas of land which have been left fallow (little or no active management), allowing for natural vegetative succession to dictate colonization of the space. These can vary in site history (farm field, parking lot, forest, etc) and site conditions (soil chemistry, soil compaction, pollution, seed bank, disturbance regime, etc). On site, we observe 3 general types of old field distinguished by vegetative structure: grassland (short), grassland (tall) and early seral stage forest.

Grassland (short) –Canopy is open and minimal woody plants are present, if any. Vegetation height rarely exceeds 16" in these areas. Short grassland locations onsite are old industrial sites where a mixture of compacted non-native soils and crumbling concrete/asphalt allow colonization by hearty cool season grass (e.g. fescue and timothy) and aggressive forb species (e.g. clover), with intermittent patches of bare soil/grave/concrete (Figure 1). Vegetative density and composition may vary throughout these locations, creating heterogeneity. Three survey points exist within this habitat type.

Figure 1. Short grassland habitat at Riverbend Site. Note patchy nature of the grasses, forbs, and bare spots. Photo by Michael J. McGraw on May 10, 2012.

Grassland (tall) – Similar to the short grasslands, these are sections of land where there is no tree canopy. The understory layer may consist of some woody species (sapling trees and shrubs), but is largely comprised of taller herbaceous vegetation, including switchgrass (*Panicum virgatum*), mugwort (*Artemisia vulgaris*), and Canada goldenrod (*Solidago canadense*) (Figure 2).

Figure 2. A barn swallow (*Hirundo rustica*) is observed gleaning insects (center) over a tall grassland patch at Katherine Street Peninsula. Photo by Michael J. McGraw on May 10, 2012.

Early Seral Stage Forest – Canopy is open in onsite successional forest/old fields. Here, significant woody vegetation is colonizing the understory and is mainly comprised of young cottonwood (*Populus deltoides*) trees (Figure 3). Height of vegetation varies from 3-15'. Shrub species found here include multiflora rose (*Rosa multiflora*) and blackberry sp. (*Rubus* sp.)

Figure 3. A doe white-tailed deer (*Odocoileus virginianus*) observed browse-foraging in the successional forest patch dominated by cottonwood trees at Porkpie. Photo by Michael J. McGraw on November 10, 2012.

3.1b Forests/Woodlands – Only small tracts of forested habitat remain within the AOC. Of these, most are highly degraded and typically are linear in shape, bordering property lines and the Buffalo River.

Riparian Forest –Few remnant riparian forest ecosystems remain within the AOC. Canopy trees are dominated by black willow (*Salix nigra*), with red maple (*Acer rubrum*), and cottonwood (*Populus deltoides*) present. These forests typically border the river, especially in locations where there is a natural connection/gradation to the river. Three onsite locations (Bailey Woods, Bailey Peninsula, and Katherine Street Peninsula) and one offsite location (Seneca Bluffs) harbor small, but intact willow-dominated riparian forests (Figure 4). Understory is typically dominated by invasive species, specifically Japanese knotweed (*Fallopia japonica*) and mugwort.

Figure 4. An adult male Cooper's hawk (*Accipiter cooperii*) perched near its nest in the riparian forest at Bailey Woods. Understory here is a monoculture of Japanese knotweed. Photograph by Michael J. McGraw on May 11, 2012.

Open Woodland (Upland) – Numerous small tracts of forest are present within the AOC which are managed as parkland, residential/yards, or open space where tree canopy is moderate and varies from 25-60' in height, depending upon age. Tree species found here include cottonwood, red maple, black willow, and black walnut (*Juglans nigra*). Understory is sparse to non-existent with mowed lawns, Japanese knotweed colonies, or mugwort/goldenrod patches in the herb layer. Older cottonwood trees exist in groves at the offsite locations (Seneca Bluffs and Coastal Lake Erie) as well as the Ohio Street Boat Launch. Younger woodlands are present at the south portion of the Riverbend site and Smith Street Pocket Park.

Figure 5. An adult male rose-breasted grosbeak in a cottonwood-dominated woodland patch at Riverbend. Photo by Michael J.

3.1c Wetlands – No natural wetlands remain within the AOC besides open water habitat (Buffalo River) and, possibly, a small river-connected section within Bailey Woods. However, some pocket wetlands and a created pond do exist and are worthy of mention.

Buffalo River – The Buffalo River course through the heart of the AOC. This is a shipping channel which is dredge-managed for navigability (Landers 2011), causing a near total loss in littoral shelve and shallow water habitat (Figure 6). Small submerged aquatic vegetations beds were observed at Bailey Street Woods and Katherine Street Peninsula.

Figure 6. A westerly view of the Buffalo River as it flows past the Smith Street Pocket Park. Photo by Michael J. McGraw on November 20, 2011.

Smith Street Pond – A small linear pond has been created at the Smith Street Pocket Park (Figure 7). This water body is bordered by planted shrubs, such as red osier dogwood (*Cornus sericea*) and viburnum (*Viburnum* sp.). Common reed (*Phragmites australis*) is invading the north bank. Fragrant water lily (*Nymphea odorata*), cattail (*Typha* sp.) and duck potato (*Sagittaria latifolia*) are present in the small, but present, emergent zone.

Figure 7. The north bank of the Smith Street Pocket Park Pond. Eastern painted turtles (*Chrysemys p. picta*) were frequently observed basking here. Note the common reed re-growth invading red-osier dogwoods along the bank. Photo by Michael J. McGraw on May 10, 2012.

Pocket Wetlands – Despite non-natural settings, water has been accumulating over time in disjunct, isolated locations on the site. Water sources are precipitation/runoff and possibly, groundwater in some instances. The most pocket wetlands observed were within the Riverbend site. With surface water being seasonal/ephemeral, wetland plant species and soil queues distinguish these subtle depressions from adjacent upland habitats, such as Joe-pye weed (*Eupatorium maculatum*), cattail (*Typha* sp.), common reed[2], and hydric soils. Created wetland depressions exist offsite at Seneca Bluffs.

Figure 8. A northern brown snake (*Storeria d. dekayi*) captured in a trash pile within a pocket wetland at Riverbend. Note the Phragmites and white grass (*Leersia viriginica*) in the background. Photo by Michael J. McGraw on May 10, 2012.

Floodplain Wetland – Wetlands influenced directly by river water levels (within the floodplain) are potentially non-existent in the AOC. At Bailey Woods a small common reed-choked depression exists which flows at-grade to the Buffalo River. This depressed area is fed by a stormwater culvert from South Park and Payson Avenues. Despite culverting immediately above the wetland within its watershed and the resultant erosion and channelization, this area may have historically been a forested floodplain wetland based upon surrounding topography.

3.1d Disturbed/Urban – All onsite habitats are influenced by anthropogenic disturbances. Those which are not naturalized enough to be classified within a natural community type (above descriptions) fall within this category. This includes abandoned and active parking lots, buildings, rail lines and roads where the dominant land features are non-natural (Figure 9).

Figure 9. An abandoned loading dock along Miami Street in the AOC (BUF105). Photo by Michael J. McGraw on November 21, 2011.

[2] AES recognizes that *Phragmites australis*, although preferential to wet conditions, may thrive in upland settings and, therefore, no wetland determinations were made by singular observations of Phragmites. Hydric soils, hydroperiods, and/or the observance of wetland obligate plant species (or any combination thereof) constitute these designations.

Figure 10. An adult ring-billed gull foraging over coastal Lake Erie. This was the most commonly observed bird species. Photo by MJM.

3.2 Avifauna

Point Counts – A total of 14 point count survey events were conducted (2 winter, 3 spring, 3 summer, and 6 fall) at 20 survey points (Appendix III). Map 2 displays the distribution of survey point locations within the study area. This effort includes 280 data sets and 4,300 active survey minutes, totaling 17,446 individual birds observed. The most frequently observed species during point count surveys were ring-billed gull (*Larus delawarensis*) (20.43% of total observations), rock pigeon (*Columba livia*) (13.28% of total observations), red-breasted merganser (*Mergus serrator*) (12.35% of total observations), and European starling (*Sturnus vulgaris*) (7.55% observations).

A total of 169 bird species were observed during the survey effort in 2012 (Appendix IV). Of these, 124 were observed within the AOC and the remaining 45 were observed within the reference locations (coastal Lake Erie and Seneca Bluffs) but not in the study area. Sixteen (16) species comprised over 85% of all point count bird observations.

A total of 63 species were observed as confirmed or probable breeding status within the project location (please refer to the methods section for a link to breeding bird code definitions). An additional 3 species (great horned owl, yellow-billed cuckoo, and orchard oriole) were confirmed breeding within the reference locations but not the study area.

Figure 11. An adult male yellow warbler (*Setophaga petechia*) on territory in the Bailey Woods riparian forest. Photo by MJM.

A total of 98 species were observed during migration survey efforts within the study area. An additional 32 species were observed migrating through the area in reference locations (immediately west or east of the AOC), but not observed within the AOC/study area.

A total of 34 species were observed wintering within the AOC. This includes migrants (7) and resident birds (27). One additional species (snowy owl) was observed using nearby resources during the winter but were not observed within the AOC. That said, a local news channel covered an attempted rescue of a snowy owl from a chimney located within the AOC, proving these species was present (but died, sadly) within the AOC.

Time- and Area-Constrained Searches for Avifauna – A total of 19.25 hours were invested in avifaunal TCS activity (Appendix V). Dates selected primarily targeted passerine, waterfowl, and shorebird migrations since the highly mobile nature of migrant foragers is best sampled by moving around versus standing in one location. A total of 138 bird species were observed during TCS activity. Of these, 14 species were only observed via this method (not observed during point counts). Map 3 shows the TCS areas.

Transect Searches – No additional bird species were identified using this method. See Appendix V for time and dates of transect search efforts. Map 4 shows transect routes.

Regulatory Status of Observed Bird Species – Table 2 details the observed New York State Listed Endangered, Threatened, and Special Concern bird species observed during the 2012 baseline faunal assessment. Underlined species are hyperlinked to NYSDEC Species Profile Sheets. In addition to state-listed species, a total of 36 Species of Greatest Conservation Need were observed onsite (NYSDEC 2005). Of these, 6 were confirmed or probable breeders within the AOC (American woodcock, brown thrasher, Cooper's hawk, grasshopper sparrow, horned lark, and willow flycatcher).

Table 2. New York State Protected Species Observed During 2012 Wildlife Survey

Species		NYS Endangered	NYS Threatened	NYS Special Concern	Onsite?	Offsite?	Breeding?
Common Name	**Taxonomic Binomial**						
Black Tern	*Chlidonias niger*	**X**				X	N
Peregrine Falcon	*Falco peregrinus*	**X**			X		N
Pied-billed Grebe	*Podilymbus podiceps*		**X**		X		N
Bald Eagle	*Haliaeetus leucocephalus*		**X**		X	X	N
Common Tern	*Sterna hirundo*		**X**		X	X	Y - Offsite
Common Loon	*Gavia immer*			**X**		X	
Osprey	*Pandion haliaetus*			**X**	X	X	N
Sharp-shinned Hawk	*Accipiter striatus*			**X**	X	X	N
Cooper's Hawk	*Accipiter cooperii*			**X**	X		**Y**
Common Nighthawk	*Chordeiles minor*			**X**	X	X	Unknown
Horned Lark	*Eremophila alpestris*			**X**	X		**Y**
Vesper Sparrow	*Pooecetes gramineus*			**X**	X		N
Grasshopper Sparrow	*Ammodramus savannarum*			**X**	X		**Y**

note: Underlined Species are hyperlinked to NYSDEC Species Profile Sheets (hold "Ctrl" and click to view)

Comparative Assessment of Bird Data

Figure 12 details the abundance of individual birds observed within the AOC during point counts. Densities were highest at the Field by Lake Erie (BUF102 = 1388 obs.), Katherine Street Peninsula Forest (BUF 108 = 981 obs.), Riverbend Pocket Wetland/Woodland (BUF120 = 638 obs.), and Bailey Woods Peninsula Floodplain Forest (BUF 113 = 601 obs.).

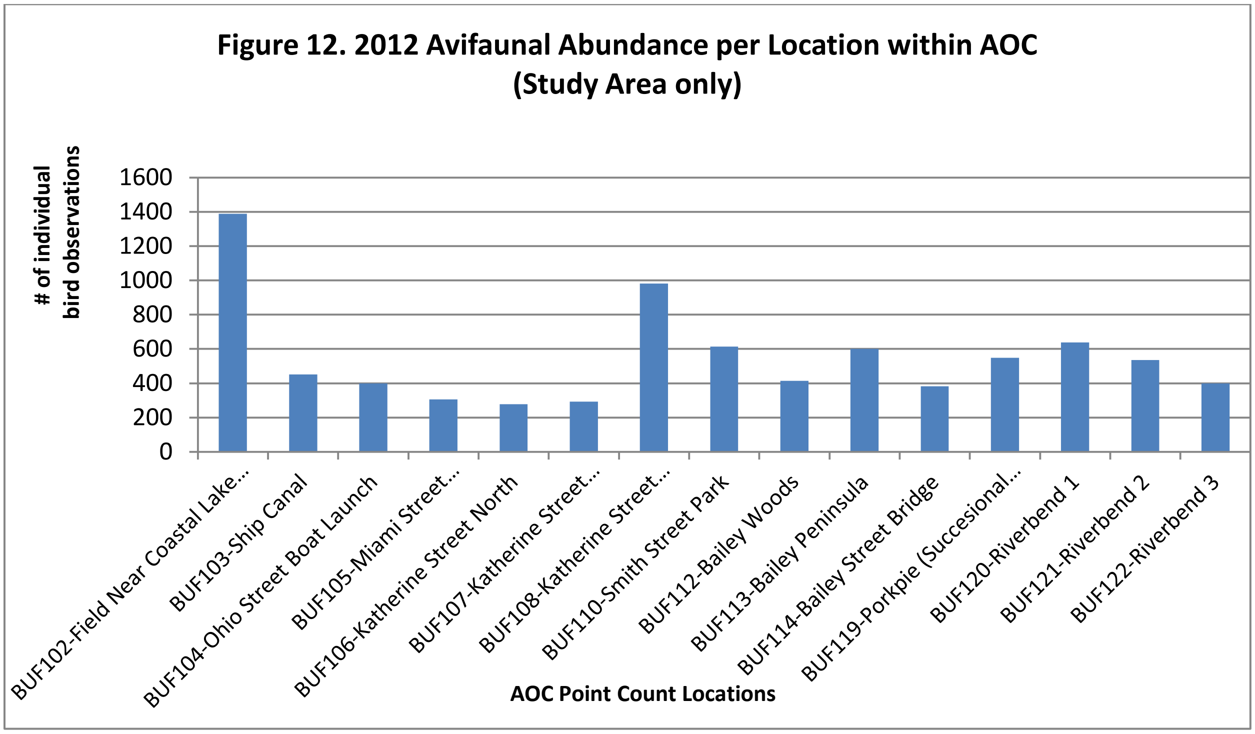


Figure 13 details avifaunal abundance for all surveyed locations. By far, the highest density of observed avifauna was at coastal Lake Erie (BUF 101 = 5080 obs.). Daily activity by ring-billed gulls, common tern nesting colony foraging behavior, and waterfowl migration largely contributed to the high number of birds observed here.

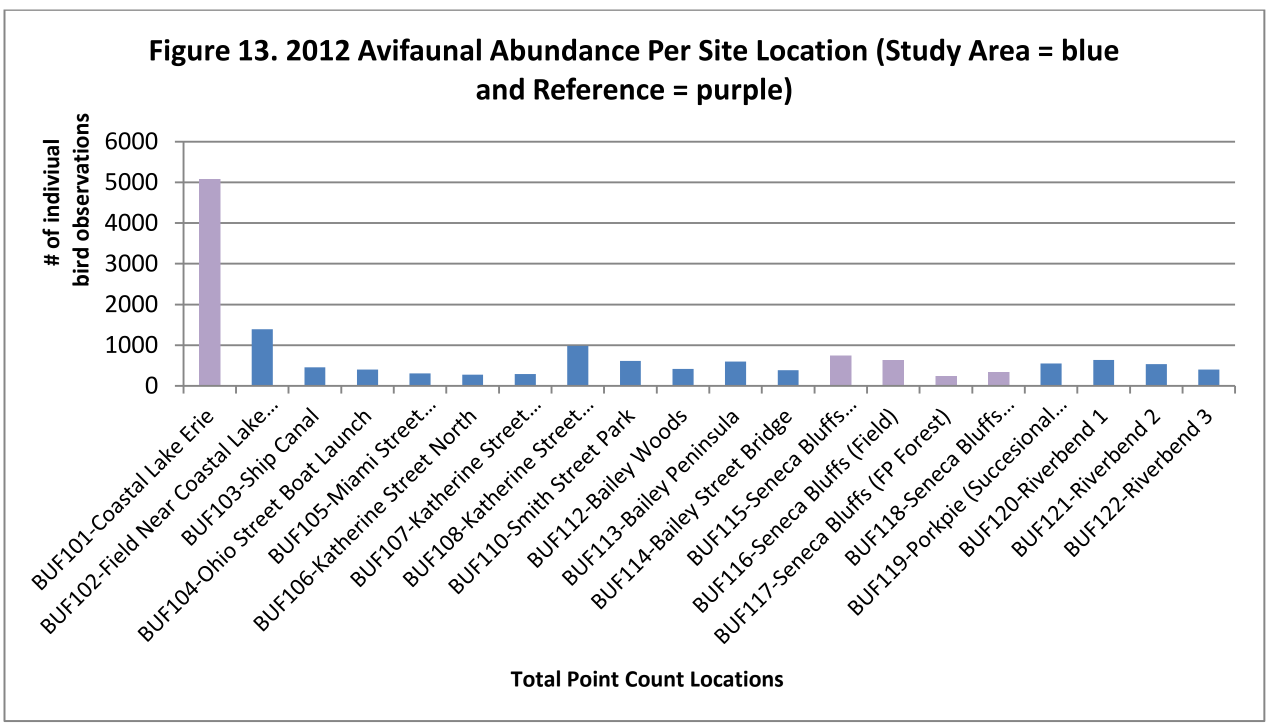
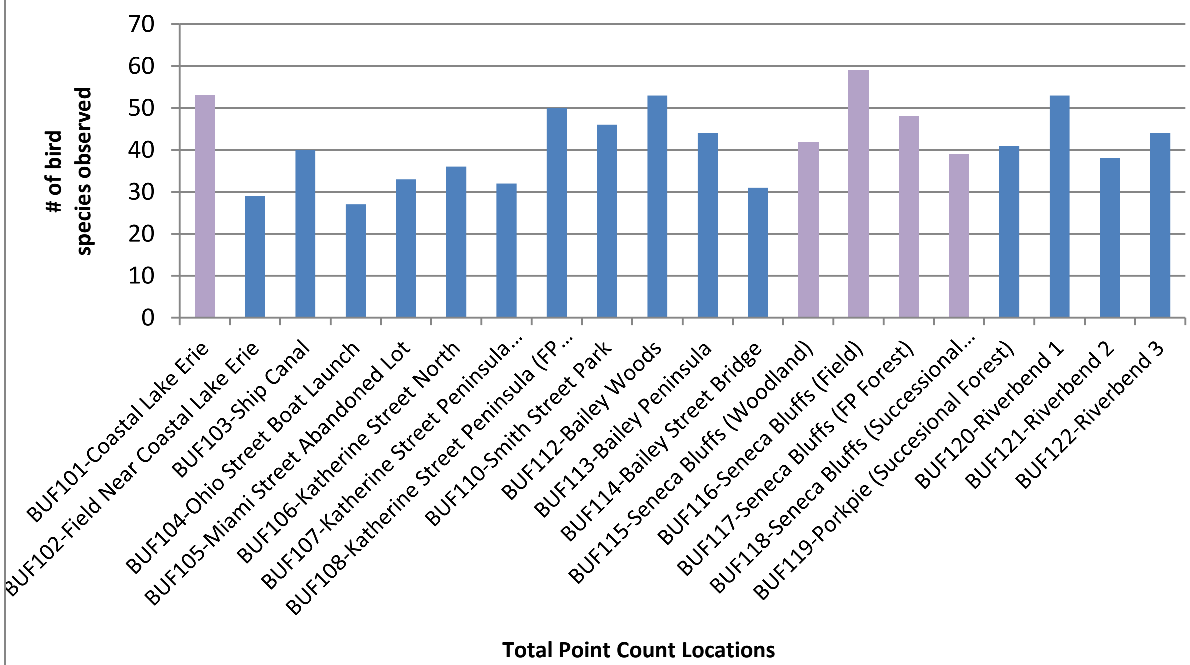


Figure 14 compares the avifaunal species diversity observed at all locations. Within the AOC, both BUF 108 (Katherine Street Peninsula Floodplain Forest) and BUF 120 (Riverbend Pocket Wetland/Woodland) were the most speciose locations with 53 species observed. In the Reference Area, the greatest species diversity was observed at BUF 116 (Seneca Bluffs Floodplain Forest/Old Field) with 59 species followed by BUF 101 (Coastal Lake Erie) with 53 species.

Figure 14. 2012 Bird Species Richness per Site Location (Study Area = blue and Reference = purple)



3.3 Herpetofauna

Time and Area-Constrained Searches – TCS was the primary survey method used to identify reptiles and amphibians on site. Over 17 site visits, a total of 57.5 surveyor search hours were expended. Time was relatively evenly distributed between the established TCS areas (Map 3). A total of 6 reptiles and 6 amphibians were observed within the AOC (Table 3). No additional species were observed outside of the AOC.

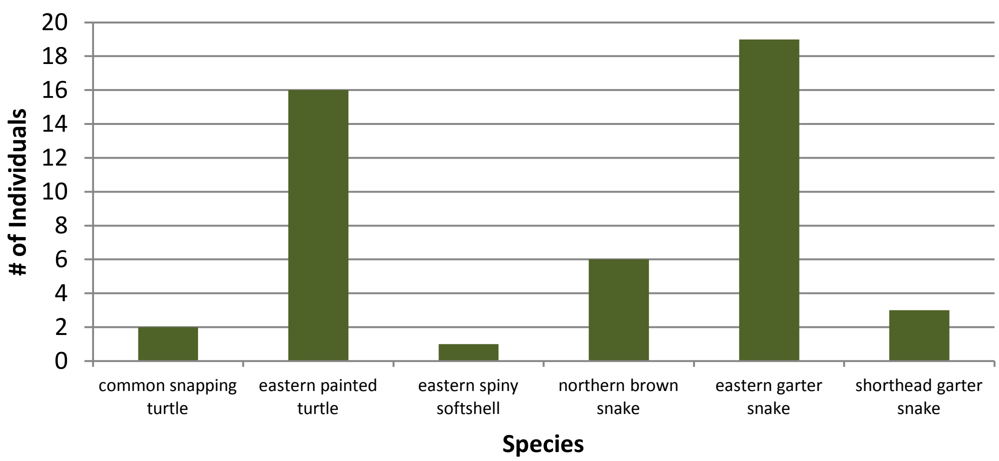
Calling Anuran Surveys – Three formal CAS events were conducted on April 4, April 27, and May 3. A total of 5 species were observed during these events (American toad, northern green frog, northern leopard frog, spring peeper and bullfrog). One additional anuran species (northern gray treefrog) was observed opportunistically while conducting other survey methods on site, typically calling from vegetation intermittently during daylight hours in summer and fall seasons.

Table 3. Herpetofauna Observed During 2012 Wildlife Survey

Faunal Assemblage	Common Name	Taxonomic Binomial
Reptiles	common snapping turtle	*Chelydra serpentina*
	eastern painted turtle	*Chrysemys p. picta*
	eastern spiny softshell	*Apalone s. spinifera*
	northern brown snake	*Storeria d. dekayi*
	eastern garter snake	*Thamnophis s. sirtalis*
	shorthead garter snake	*Thamnophis brachystoma*
Amphibians	American toad	*Anaxyrus americana*
	northern spring peeper	*Pseudacris c. crucifer*
	northern gray treefrog	*Hyla versicolor*
	northern leopard frog	*Lithobates pipiens*
	northern green frog	*Lithobates clamitans melanota*
	bullfrog	*Lithobates catesbeiana*

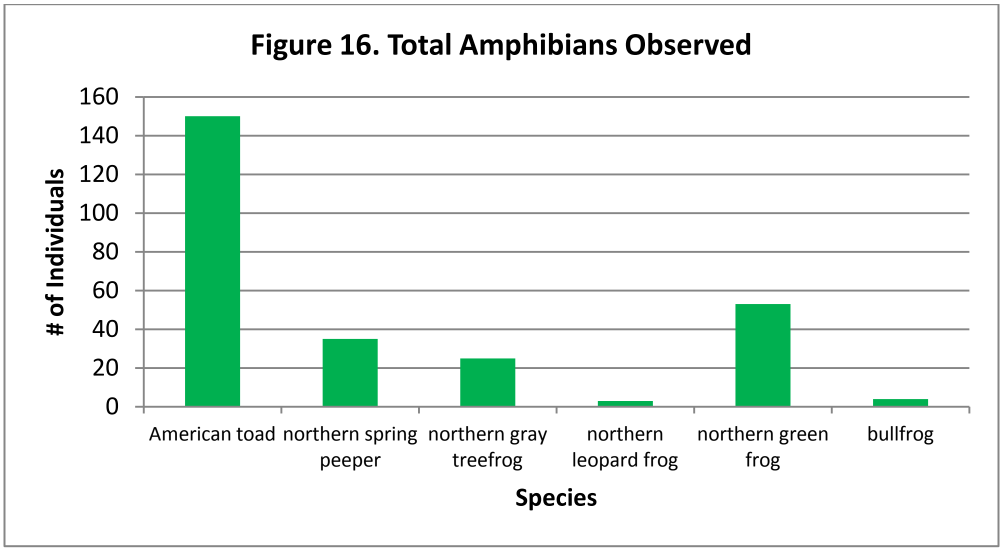
The most commonly observed reptile species was eastern garter snake (n=19) followed by eastern painted turtle (n=16) (Figure 15). Sites which contained a mixture of habitats (field, forest, and wetlands) produced the most reptile observations.

Figure 15. Total Reptile Observations



The most commonly observed amphibian species were American toad (n=~150 calling males) followed by northern green frog (n=13 individuals + ~40 calling males) (Figure 16). Calling spring peepers[3] and northern gray treefrogs were observed more so after the breeding season (summer and fall), calling from vegetation within 100M of water, especially offsite at Seneca Bluffs, but also on site within areas containing floodplain forest and the Riverbend site. No salamander species were observed during the data collection effort (see discussion).

[3] Northern spring peeper abundance data provided in the RAC presentation was erroneous/mistakenly over-estimated. The data provided here accurately reflects the original data sheets.



Regulatory Status of Observed Herpetofauna – Below is a table (Table 4) detailing the observed New York State Listed Endangered, Threatened, and Special Concern bird species observed during the 2012 baseline faunal assessment. In addition to state-listed species, a total of 2 Species of Greatest Conservation Need (eastern spiny softshell and short-head garter snake) (Figure 17) were observed onsite (NYSDEC 2005). Interestingly, neither of these species are considered within the Lake Erie Basin ecological region (see Discussion).

Table 4. New York State Protected Herpetofauna Species Observed During 2012 Wildlife Survey

Species		NYS Endangered	NYS Threatened	NYS Special Concern	Onsite?	Offsite?	Breeding?
Common Name	**Taxonomic Binomial**						
eastern spiny softshell	*Apalone spinifera*			X	x		?

Comparative Assessment of Herpetofauna Data

Figure 18 compares the abundance of all herpetofauna (reptiles and amphibians combined) observed per designated TCS area. Abundance was highest in the Riverbend location (TCS area #5) due to the highest density of observed breeding American toads during CAS and individual snakes (Figure 20) captured during TCS, followed by Smith Road Park (TCS area #4) due to breeding Lithobatids and an eastern painted turtle (Figure 21) population in the created pond.

Figure 17. A neonate shorthead garter snake found in a roof shingle pile at Riverbend. This confirms active breeding within the AOC for this unique species. Photo by MJM.

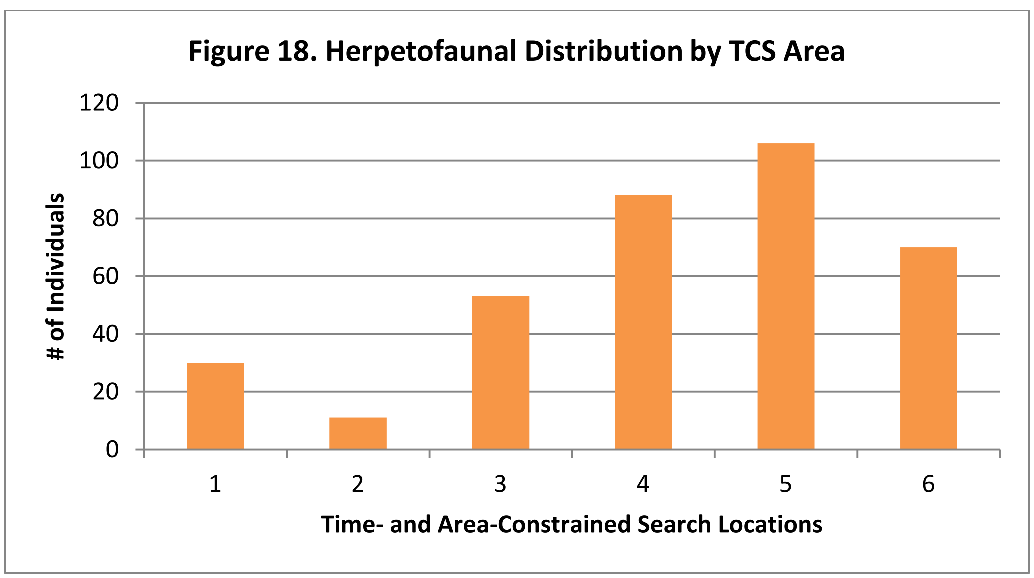


Figure 19 displays the above abundances by faunal assemblage, highlighting the weighted use of TCS areas by both reptiles and amphibians. Again, locations with habitat heterogeneity revealed higher abundance and diversity of herpetofauna.

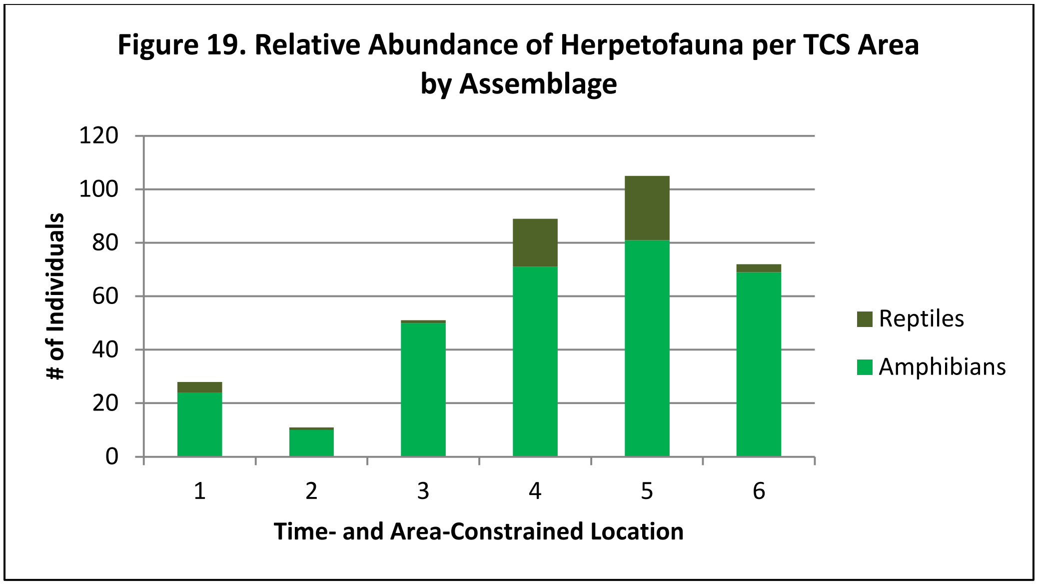


Figure 20. An adult eastern garter snake in-situ as revealed concealed under a wooden board at Riverbend. Photo by MJM.

Figure 21. An adult painted turtle basking on the north bank of the Smith Street pocket park. Photo by MJM.

3.4 Mammals

A total of 20 mammal species were confirmed/ observed within the AOC (Table 5). Four (4) methods were used to compile these observations.

Table 4. Total Mammal Species Observed within LBR AOC in 2012		
Common Name	**Taxonomic Binomial**	**Notes**
eastern red bat	*Lasiurus borealis*	Riverbend, Porkpie, Bailey Woods & Reference Site
hoary bat	*Lasiurus cinereus*	Riverbend, Porkpie, Bailey Woods & Reference Site
house mouse	*Mus musculus*	at locations close to residential development
white-footed/ deermouse	*Peromyscus sp.*	abundant in fields
short-tailed shrew	*Blarina brevicauda*	fields and forest near buildings
meadow vole	*Microtus pennsylvanicus*	fields
eastern chipmunk	*Tamias striatus*	Bailey Peninsula & Reference Site
eastern gray squirrel	*Sciurus carolinensis*	abundant
eastern cottontail rabbit	*Sylvilagus carolina*	common in shrubby fields throughout site
American mink	*Mustela vison*	along naturalized shorelines (tracks, burrows) at Bailey Woods & Reference Site
muskrat	*Ondatra zibethicus*	in Smith Street created pond
American beaver	*Castor canadensis*	recent evidence (tree girdling) at Reference Site
opossum	*Didelphium virginianum*	4 DOR on South Park Ave.
striped skunk	*Mephitis mephitis*	Porkpie
groundhog	*Marmota monax*	numerous
raccoon	*Procyon lotor*	abundant on site, tracks on naturalized shorelines
red fox	*Vulpes vulpes*	den near BUF 102
eastern coyote	*Canis latrans* var.	scat and tracks at Riverbend
white-tailed deer	*Odocoileus virginianus*	abundant, mostly Riverbend, Porkpie, and Katherine St.
feral cat	*feral cat*	abundant

Time- and Area-Constrained Searches – A total of 7.5 hours were expended focusing primarily on mammals while conducting TCS (1.25 hrs/TCS area). Many of these observations consisted of evidence of recent mammal presence/activity (ex. beaver chewing, coyote scat, raccoon tracks, etc.). A total of 14 species were observed during TCS activity. Two species, meadow vole and short-tailed shrew, were only observed during Sherman live trapping.

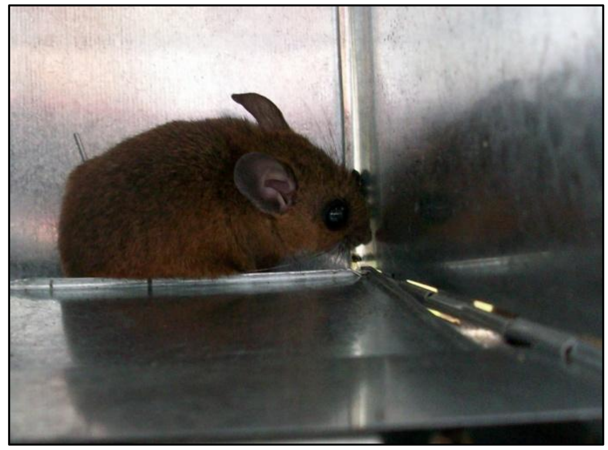
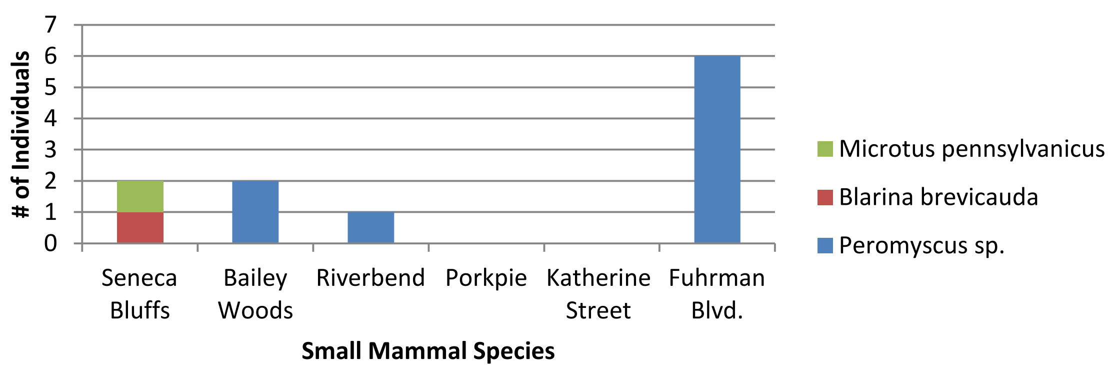


Figure 22. A *Peromyscus* complex mouse species captured in a Sherman live trap at Riverbend. Photo by Nathan Grosse.

Sherman Live Trapping – Two trapping events were conducted on 7/31-8/2 and 10/16-18 for a total of 2880 trap hours over 6 trapping locations (Seneca Bluffs, Bailey Woods, Porkpie, Riverbend, Katherine Street, and Fuhrman Boulevard). Eleven (11) captures were documented consisting of 3 species (Peromyscus complex sp., short-tailed shrew, and meadow vole) (Figures 22 & 23). Some traps seem to have been predated (evidence of tampering and some blood on/in the traps) at the Seneca Bluffs array. Additionally, at 4 of 6 sites some traps were 'triggered' (trap door closed) with bait consumed and scat left inside, but no was animal captured.

Figure 23. Distribution of Small Mammals Captured in Sherman Live Trap Arrays



Transect Searches – Driving transects revealed nocturnal mammal activity as well as locations where mammals were being killed along roads. Eight (8) species were observed during driving transects. The highest density of road-killed and live mammal observations during driving transects was along South Park Avenue (north and south). The most commonly observed road-killed species was gray squirrel (n=21), followed by opossum (n=4) and raccoon (n=2). Not all proposed walking transects were able to be accessed due to private property/lack of permission. Walking transects were most productive in conjunction with TCS efforts when active investigation of findings could be pursued. A total of 16 species were observed during walking transects. The highest densities of observed mammals during walking transects were white-tailed deer (n=43), gray squirrel (n=19), groundhog (n=14), and red fox (n=7). Please note that individual animals are likely repeatedly counted (ex. herd of ~7 deer at

Riverbend/Porkpie were observed on numerous site visits). One species, house mouse was only observed during walking transects.

Phase I Bat Habitat Assessment **-** Several different natural communities are present at the Buffalo River Project. Most of the remaining natural areas within the project limits are influenced heavily by urban activities. A more detailed supplemental bat survey report can be found in Appendix VII. The following is a description of natural communities present:

1. Successional Old Field: This natural community is dominated by forbs and grasses and occurs on sites within the project area that have been cleared or used for development, and then abandoned. Species observed in these areas include goldenrods (*Solidago* spp.), bluegrasses (*Poa pratensis* and *P. compressa*), timothy (*Phleum pretense*), quackgrass (*Agropyron repens*), brome (*Bromus inermis*), orchard grass (*Dactylis glomerata*), common evening primrose (*Oenothera biennis*), cinquefoil (*Potentilla* spp.), calico aster (*Aster lateriflorus*), New England aster (*Aster novae-angliae*), wild strawberry (*Fragaria virginiana*), Queen-Anne's lace (*Daucus carota*), ragweed (*Ambrosia artemisiifolia*), and dandelion (*Taraxacum officinale*). Few scattered shrubs and trees were present in these communities, and included dogwood species (*Cornus* spp.) and cottonwood saplings (*Populus deltoides*). Areas that would be classified as a successional old field include Riverbend, Pork Pie, and portions of the Seneca Bluffs site. These areas are not as advantageous for bats due to decreased insect availability, but could be used in transit to other areas of the project.

2. Pond: This natural community is dominated by forbs and grasses, and occurs on sites within the project area that are currently used for recreational purposes. Species observed in this natural community included duckweeds (*Lemna minor, L. trisulca*), waterweed (*Elodea canadensis),* pondweeds (*Potamogeton* spp.), and white water-lily (*Nymphea odorata).* These ponds may be slightly eutrophic, and could include several different species of fishes and macroinvertebrates. Areas in the project location that would be classified as a pond include the Smith Road pocket park. These areas can be advantageous for bats due to high insect availability and ease of maneuverability if ponds are relatively free of floating vegetation for drinking water purposes.

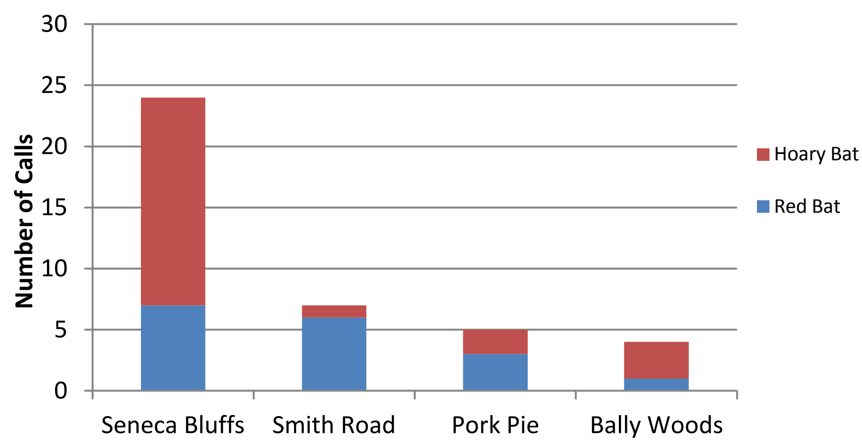
3. Floodplain Forest: This natural community is defined as an area that occurs on mineral soils on low terraces of river floodplains. These natural areas are characterized by the flood regime, typically flooding in spring and drying out in late summer. Species observed in this natural community include willow (*Salix* species), butternut and black walnut (*Juglans cinera, J. nigra*), oaks (*Quercus bicolor, Q. palustris*), and box elder (*Acer negundo*). Several other tree species may also occur. Shrub species observed in this community included dogwoods (*Cornus* spp.), viburnum (*Viburnum* spp.), and honeysuckles (*Lonicera* spp.). Herbaceous vegetation observed in this community included sensitive fern (*Onoclea sensibilis*), ostrich fern (*Metteuccia struthiopteris*), goldenrods (*Solidago* spp.), jewelweeds (*Impatiens capensis, I. pallida*), and abundant Japanese knotweed (*Polygonum cuspidatum*). Areas in the project location that would be classified as a floodplain forest include Bailey Street Woods, Bailey Peninsula, Katherine Street Peninsula, and portions of Seneca Bluffs. These areas can be advantageous for bats due to high insect availability and ease of maneuverability if little understory is present.

4. Wet Meadow: This natural community is defined as an area that occurs in poorly drained areas such as low-lying depressions and in the areas between water bodies and upland areas.

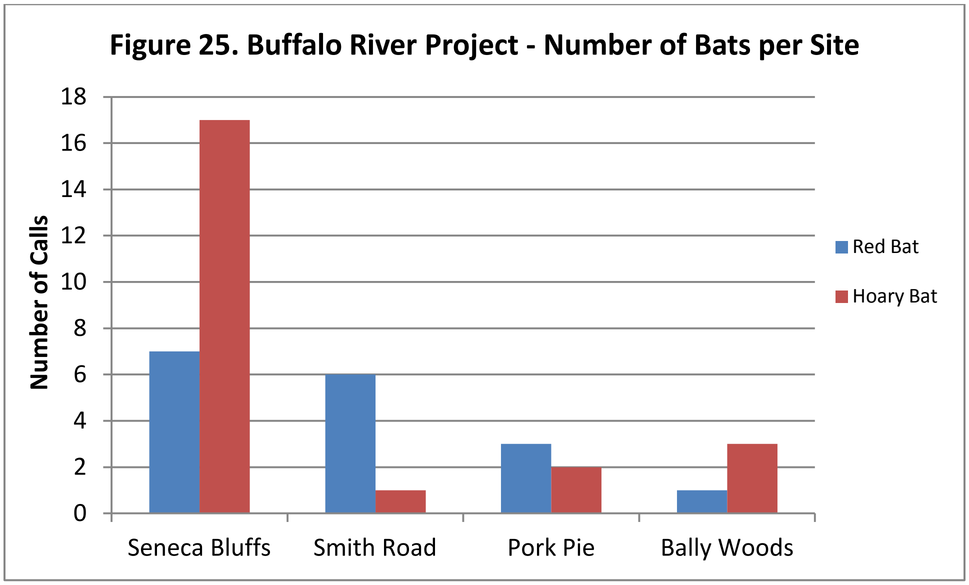
Precipitation is the primary water supply for these areas, and they often dry out in summer months. Characteristic herbaceous species in these communities include water plantain (*Alisma plantago-aquatica*), beggar-ticks (*Bidens frondosa*), horsetail (*Equisetum arvense*), spikerush (*Eleocharis* spp.), phragmites (*Phragmites australis*), and bulrushes (*Scirpus* spp.). Tree species include scattered cottonwood (*Populus deltoides*) and sycamores (*Platanus occidentalis*). Areas in the project location that would be classified as a wet meadow include portions of the Seneca Bluffs site. These areas can be advantageous for bats due to high insect activity and ease of maneuverability due to little canopy cover.

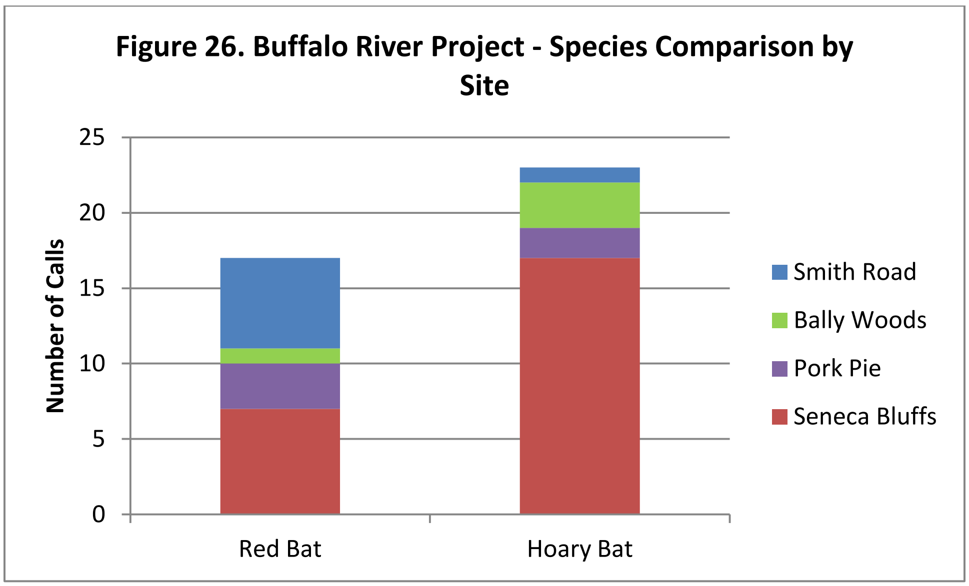
Active Acoustic Monitoring for Bats – AES conducted acoustic bat surveys on four different sites located throughout the Buffalo River Project site. We recorded a total of 40 bat passes during acoustic bat surveys representing two species of bats. The Hoary Bat (*Lasiurus cinereus*) was the most frequently recorded species during the survey (57.5 % of all calls). The Hoary Bat is the largest bat and is also one of the most widespread species in the U.S. Hoary bats typically emerge late in the evening, hunting at higher elevations over treetops, clearings, fields, and over streams. The Red Bat (*Lasiurus borealis*) was also recorded at all sites and comprised 42.5% of all calls. The Red Bat is a medium-sized bat with long pointed wings and short rounded ears. This bat emerges early in the evening, commonly feeding below streetlights, among trees, and over water.

Figure 24. Buffalo River Project - Total Bats per Site



Bat activity varied among monitoring locations (Figures 24 & 25). The Seneca Bluffs site had the greatest activity with a total of 24 recorded bat passes during the field investigations (17 Hoary, 7 Red Bats), followed by the Smith Road site, 7 passes (1 Hoary, 6 Red Bats), the Pork Pie site, 5 passes (2 Hoary, 3 Red Bats), and Bally Street Woods site, 4 passes (3 Hoary, 1 Red Bat).





The Seneca Bluffs site recorded the highest amount of bat passes (60% of all calls recorded) (Figure 26). This site is characterized as a restored prairie with sedge meadow inclusions along the Buffalo River. The Smith Road site also had a higher amount of calls (17.5% of all calls) and is described as an open-pond area surrounded by fragmented tree canopy with a recreational walking trail. The Pork Pie site is characterized as a successional old field with scattered young cottonwood saplings and totaled 12.5% of all recorded passes. The remaining site, Bally Woods, recorded a total of 4 of 40 total calls (10%). Bally Woods is a floodplain forest site with large cottonwood, willow, oak, and walnut, with a relatively closed canopy. Figures 27 & 28 are example sonograms from the collected bat acoustic data collection effort.

Figure 27. **Hoary Bat (*Lasiurus cinereus*) at the Seneca Bluffs Site.**

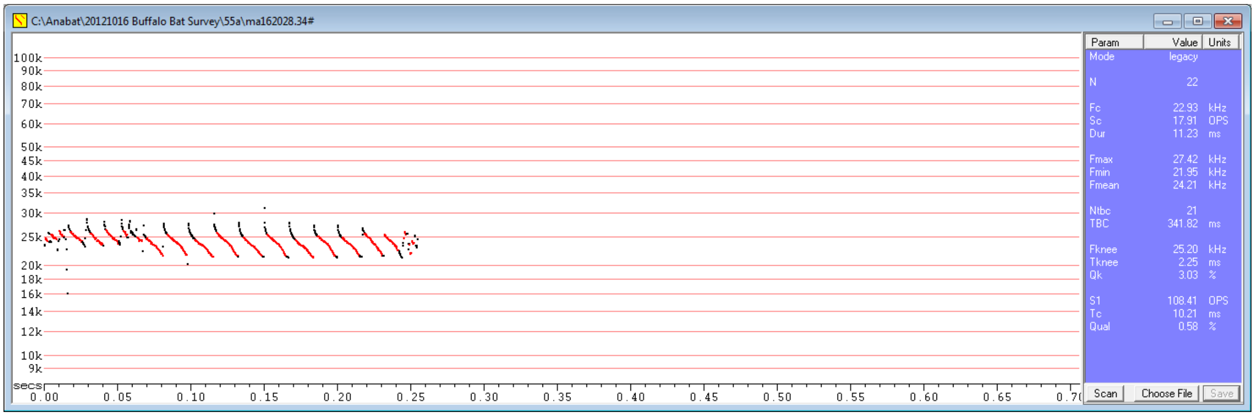


Figure 28. **Eastern Red Bat (*Lasiurus borealis*) at the Pork Pie Site.**

<u>Rodents, Soricomorphids (moles and shrews), and Didelmorphids (opossums)</u> – A total of 6 rodent species were observed during the study effort (Peromyscus sp. mouse, house mouse, meadow vole, eastern chipmunk, gray squirrel, and North American beaver). One Soricomorphid (short-tailed shrew) was observed and one Didelmorphid (Virginia opossum) were documented (primarily dead on roads). Two of these species were observed only at the reference site (meadow vole and short-tailed shrew) and one species (house mouse) was only observed within the study area.

North American beaver was documented as a recently present species due to 'fresh' girdling and tree base gnawing observed at the references site near BUF118 ('fresh' suggests within ~6 months of observation). No beaver lodges were located during mammal surveys. Older girdling suggestive of beaver activity was observed at the Ohio Street Boat Launch (BUF104). A paucity of adequate habitat within the urbanized river ecosystem likely limits this species' presence within the AOC, although many accounts of 'urban beavers' are documented in urbanized river-associated ecosystems (mostly in ponded areas) in New York City, Chicago, and Philadelphia.

<u>Non-natives</u> - Although likely present within the study area, we did not document any rat species. House mouse seems to be restricted to areas near residential developments within the study area. There is a population of feral house cats within both the reference and study areas which may currently impact reptile, amphibian, and ground-nesting bird species.

Mesocarnivores – A total of 4 mesocarnivore species were observed during the study (eastern coyote, red fox, raccoon, and striped skunk). Of these, coyote was not observed at the reference site. The other three species were observed within both the study area and the reference site. The presence or absence of particular mesocarnivores can have significant implications regarding general ecological health due to their hunting requirements and preference for both plant and animal food sources. All observed mesocarnivores are generalist species which are highly adaptive to human influences so their presence within the AOC is not unexpected. That said, eastern coyote prefers larger prey items and may rely upon the onsite eastern cottontail population.

Carnivores - American mink is the only true carnivore observed during this study effort. On two occasions our team observed mink tracks (paired, five toe marks with nails and irregular toe pad, ~1 ½" x 1 ¼"). Along the river bank at the reference site these tracks led directly to a burrow. No live minks were observed during our survey effort. Although anecdotal, our observations (including repeated searches of the river banks for tracks and other animal evidence) suggest that any mink population within the study area and nearby reference site is a low-density population. Despite an adequate prey base (rodents, fish, amphibians, and reptiles), populations may be limited by available stream bank habitat/burrow sites, habitat fragmentation, and water quality/chemical pollution. Recent accounts of American mink populations on the ice-break walls in Coastal Lake Erie near the mouth of the Buffalo River are documented. Here, the presence of mink has caused problems for nesting colonies of common terns.

3.5 Anecdotal (non-Target) Observations

A variety of invertebrates species were observed during the course of this investigation. This is not a complete list and these observations are of an anecdotal/opportunistic nature, however, worthy of mentioning. Formalized invertebrate surveys (for respective groups) should be considered if a comprehensive list is desired.

Figure 29. A female black swallowtail (*Papilio polyxenes*) observed at Riverbend. Photo by MJM.

Table 6. Anecdotally Observed Invertebrates During 2012 AOC Widllife Study

Faunal Group	Common Name	Taxonomic Binomial	Notes
Butterflies and Skippers (Lepidoptera)	black swallotwail	*Papilio polyxenes*	Riverbend
	cabbage white	*Pieris rapae*	Multiple Sites
	clouded sulphur	*Colias philodice*	Multiple Sites
	orange sulphur	*Colias eurytheme*	Multiple Sites
	American copper	*Lycaena phlaeas*	Riverbend
	eastern tailed blue	*Cupido comyntas*	Riverbend
	spring azure	*Celastrina ladon*	Riverbend
	grerat spangled fritillary	*Speyeria cybele*	Ship Canal
	pearl crescent	*Phycoides tharos*	Multiple Sites
	question mark	*Polygonia interrogationis*	Bailey Woods Edge
	mourning cloak	*Nymphalis antiopa*	Riverbend
	painted lady	*Vanessa atalanta*	Seneca Bluffs
	red admiral	*Vanessa cardui*	Riverbend, PorkPie
	common buckeye	*Junonia coenia*	Riverbend
	monarch	*Danaus plexippus*	Seneca Bluffs
	common wood-nymph	*Cercyonis pegala*	not confirmed
	common ringlet	*Coenonympha tullia*	not confirmed
	silver-spotted skipper	*Epargyreus clarus*	Seneca Bluffs
	cloudywing spp.	*Thorybes spp.*	Seneca Bluffs
	European skipper	*Thymelicus lineola*	Seneca Bluffs
	skipper spp.	*Hesperia spp.*	Seneca Bluffs
Dragonflies and Damselflies (Odonata)	darner	*Aeshna sp.*	Riverbend, Seneca Bluffs
	eight-spotted skimmer	*Libellula forensis*	Riverbend, Seneca Bluffs
	common whitetail	*Plathemis lydia*	Riverbend, Seneca Bluffs
	eastern pondhawk	*Erythemis simplicicollis*	Riverbend, Seneca Bluffs
	dragonfly spp		Riverbend, Seneca Bluffs
	damselfly spp.		Riverbend, Seneca Bluffs
Orthoptera	grasshopper spp.		fields, especially Riverbend
Coleoptera	numerous beetle species		entire site
Unionids	Asiatic clam	*Corbicula fluminea*	Invasive, In-River at Bailey Woods
	zebra mussel	*Dreissena polymorpha*	Invasive, In-River at Bailey Woods
Arthropoda	pillbug	*Armadillidae*	abundant
	centipede spp.		in areas with other insects
Araneae	many spider spp.		abundant, speciose
Gastropoda	English garden snail	*Cepaea nemoralis*	brilliantly colored, ringed shells. Highly variant. Abundant at Riverbend, but present throughout AOC
Other	earthworms		invasive, abundant

4. Discussion

4.1 Habitat

All habitats observed on site are previously (or actively) disturbed by human use. Small, relict sections of native floodplain forest exist. Invasive species, primarily Japanese knotweed, are degrading these forested sections. Additionally, high human traffic has led to soil compaction, trash/dumping, disturbance during breeding seasons, and propagation of invasives. Dredging activity has and continues to deepen the Buffalo River channel, causing slumping/wasting of the littoral shelf (Landers 2011) resulting in reduced wildlife habitat. Planned dredging of the Buffalo River within the GLLA plan will improve water quality and ecological conditions within the Buffalo River aquatic ecosystem (by removal of contaminated sediment) over time and may play a large role in restoring the ecology of the AOC as a whole (both aquatic and terrestrial), due to the important role of the aquatic ecosystem for fish, insects, and terrestrial animals, such as water fowl, shorebirds, mammals, and herpetofauna.

In an effort to provide readers with a general spatial layout, estimated acreages of each habitat type are provided below. This assumes a rectangular AOC (15,300 ft x 8,000 ft) which encompasses 6.2 linear miles of the Lower Buffalo River and adjacent terrestrial landscape and totals ~2810 acres (see Appendix I - Map 1 extent). Although not formally quantified, estimated percentages and acreages of total AOC habitat composition are as follows:

1. Grassland (low) – approximately 4% or 113 acres
   Limited acreage/patch size is likely a limiting factor for faunal response to this habitat type.
2. Grassland (high) – approximately 7% or 197 acres
   Small acreage lots and lack of native plant species limits use of this habitat by tall grass-breeding birds
3. Successional Field – approximately 2% or 56.5 acres
   As a dynamic and temporary habitat type, limited overall acreage of forested habitat and suppressed natural disturbance factors limit the long-term continuity of this habitat type within the AOC. Forest restoration/creation will create 2+ decades of successional forest habitat value.
4. Woodland (Upland) – approximately 2% or 56.5 acres
   Most upland woodlands in the AOC are currently residential lawns and parks (mowed lawn understory). Significant potential to increase breeding bird diversity exists in upland forest/woodland restoration activity.
5. Woodland (Riparian) – approximately 7% or 197 acres
   Small patch size and narrow configuration (corridors paralleling the River) limit the value of onsite riparian woodlands. Significant potential exists to increase riparian forest acreage via restoration activity. A restored/enhanced riparian woodlands/forest complex in the AOC would be capable of supporting a notable increase in abundance and diversity of avifauna.
6. Open Water (River) and Shoreline – approximately 13% or 365 acres
   Due to the maintenance of the Buffalo River as a navigable waterway, much of its shallow water habitat zones are depleted by dredging activity. An increase in migratory bird diversity is anticipated as a result of well-conceived shoreline restoration and submergent aquatic vegetation bed restoration.
7. Open Water (Coastal Lake Erie) – 0%
8. Urban/Highly Disturbed – approximately 65% or 1,826 acres

This is the dominant land use. Urbanization is characterized by keystone species such as house sparrow and rock pigeon. Efforts to minimize the acreage of urban/highly disturbed habitat should be considered.

9. Emergent Marsh - < 0.1% (less than ¼ acre)
   Nearly non-existent in the AOC, this habitat type should be considered for restoration and/or creation within the AOC. High potential to increase biodiversity within the AOC exists as a result of emergent marsh/shallow water wetland creation.

4.2 Avifauna

It is clear that the diversity and abundance of breeding and migratory bird species within the AOC will be a determining factor for assessing wildlife habitat and wildlife populations related to BUI delisting criteria. Therefore, below are some reviews of the gathered baseline data to aid in understanding the current conditions per habitat available within the AOC/study area. I have also included bird species which may be found in migration or foraging during the breeding season within the respective habitat types. Since our reference locations provided marginal (but real) value, additional columns which list potential breeding and migratory bird populations within respective habitat types in western New York are provided.

Table 7. Comparison of Observed Breeding and Migratory Bird Diversity in the Study Area vs "Reference" Areas vs Regional Potential by Habitat Type

Habitat Type (Currently Present or Lacking/Proposed)	Study Area Points per Habitat Type	"Reference" Area Points per Habitat Type	Total Study Area/AOC		Total Reference Area		Within Region/ Potential*	
			Confirmed or Probable Breeding Status**	Observed Foraging/Non-Breeding (excluding breeding species)	Confirmed or Probable Breeding Status**	Observed Foraging/Non-Breeding (excluding breeding species)	Potential to Breed	Potential to Forage (excluding breeding species)
Grassland (low)	121, 122	None	6	28	N/A	N/A	13	43
Grassland (high)	102, 107/109, 120	116	10	29	14	43	16	50
Successional Field	119	118	18	29	27	10	27	68
Woodland (upland)	105, 110, 120	115, 118	39	25	24	13	68	45
Woodland (riparian)	106, 108, 112, 113	116, 117	52	26	49	24	80	49
Open Water (River) and Shoreline	103, 104, 110, 114	115, 117	20	31	11	19	21	65
Open Water (Lake Coast)	None	101	N/A	N/A	7	47	10	51
Urban/Highly Disturbed	105	None	11	22	N/A	N/A	N/A	N/A
Emergent Marsh	None	None	N/A	N/A	N/A	N/A	30	55

* - This list was compiled by reviewing Sibley 2000 and life history information for all North American bird species.

** - Per NY State Breeding Bird Atlas Behavior Codes Documented During this Survey Effort which are associated with each habitat type

NOTE - Total acreage of Reference location habitat types are smaller compared to total Study Area, limiting overall carrying capacity

Based upon the observed versus potential data in Table 7 there is potential to increase the diversity of breeding birds within the study area (AOC) through habitat enhancement, restoration, and creation. When considering the finite space available for restoration activity within the AOC, realistic goals should be set regarding target faunal responses, especially for interior forest-breeding animals.

Direct Comparisons to Reference Area Data

Comparison of similarly sized reference and study area points can be extrapolated from the data. For example, Bailey Woods (study area) and Seneca Bluffs (reference area) both contain <10 acre floodplain forest tracts. When comparing observed bird species within these two floodplain forests, the reference area data revealed 10 more species in overall abundance. However, when evaluating habitat associations of the native species observed, 9 forest-associated species were observed at Bailey Woods (study area) which were not observed at Seneca Bluffs (reference area) while 23 forest associated species were observed at Seneca Bluffs but not at Bailey Woods. If you isolate the species which breed within floodplain forests in the region from the above sub-population (native forest-associated species which were observed only at one of the two compared locations) there are 5 at Bailey Woods and 14 at Seneca Bluffs, suggesting a potentially significant difference.

A similar comparison may be achieved for the Katherine Street Peninsula floodplain forest/field complex (study area) and the Seneca Bluffs floodplain forest/field complex (reference area). Both sites contain forested and field locations of similar acreage and both have survey points which incorporate sight lines to the Buffalo River (open water habitat). In this comparison, the reference area data revealed 13 more species in overall abundance (66 at the collective Katherine Street points and 79 at the collective Seneca Bluffs Points). However, when evaluating habitat associations of the species observed, the difference in forest-associated birds (within the subset of native species observed at only one of the two locations) is potentially significant (11 total, 5 breeding at Katherine Street and 25 total, 16 breeding at Seneca Bluffs). Comparisons of open water and old field birds within this subset are negligible.

Low-height grasslands and successional fields cannot be adequately compared to reference locations due to a lack of suitable reference habitat within the region. Grassland sites within the AOC, specifically the Riverbend location, contribute greatly to the diversity of breeding bird species, resident mammals, and herpetofauna in the study area. Successional fields are extremely valuable for migratory birds, cottontail rabbits, small mammals, and allows the potential for shrubland/successional field habitat-specific breeding birds, such as chestnut-sided warbler, blue-winged warbler, eastern towhee, and field sparrow to establish breeding populations in the AOC.

Below are some suggested bird species whose current presence or absence within preferred habitat types may serve as indicators of ecosystem health and, therefore, aid in determining if delisting criteria have been met within the AOC.

Table 8. Proposed Target Avifauna per Habitat Type for Gauging Ecosystem Health

Habitat Type	**GOALS** Breeding Birds	**GOALS** **F**orage/**M**igration/**W**intering
Grassland (low)	grasshopper sparrow, savannah sparrow, horned lark American woodcock	vesper sparrow (M), upland sandpiper (M), short-eared owl (W)
Grassland (high)	eastern meadowlark, bobolink, eastern bluebird	wild turkey (F), Nashville warbler (M), American woodcock (M)
Successional Field	field sparrow, chestnut-sided warbler, blue-winged warbler	mourning warbler (M), Lincoln's sparrow (M), American tree sparrow (W), orange-crowned warbler (M)
Woodland (upland)	wood thrush, ovenbird, black-and-white warbler pileated woodpecker	15+ neotropical warbler species (M), blue-headed vireo
Woodland (riparian)	scarlet tanager, American redstart, veery, yellow-billed cuckoo	20+ neotropical warbler species (M), winter wren (M,W), red-shouldered hawk (M,W)
Open Water (River) and Shoreline	American black duck, spotted sandpiper	gadwall (M), pintail (M), bufflehead (M,W), ringneck duck (M), lesser yellowlegs (M), semipalmated sandpiper (M)
Emergent Marsh	common moorhen, American bittern, marsh wren, blue-winged teal	swamp sparrow (M), common snipe (M), black-crowned night heron (M), great blue heron (M,W)
Open Water (Lake Coast)	N/A	N/A
Urban/Highly Disturbed	N/A	N/A
NOTE - Some of these species are already confirmed present. Maintaining these populations is important		

Notable Rarities - Overall, species observed were typical for the region and dominant land use (urban). Highly generalist omnivorous species, such as ring-billed gulls, pigeons, and starlings are most abundant. However, some rare bird species were observed during the survey effort which are worthy of mention, as they are rarely or only occasionally observed within the region. Bird migration is a highly varied phenomenon, with many variables influencing where a particular bird may appear (migratory patterns, weather conditions, experience, stopover conditions, food/resource fluctuation, etc.). Along the eastern shore of Lake Erie the potential to observe displaced birds is high, with a long history of vagrant/aberrant observations documented. In 2012, rare gulls, particularly little gull (*Larus minutus*), black-headed gull (*Larus ridibundus*), and Sabine's gull (*Xema sabini*) were all observed at different times mixed in with hundreds of other foraging/soaring gulls (mostly ring-billed and Bonaparte's gulls). Another rare but regular winter visitor to the Buffalo shore of Lake Erie is the snowy owl (*Nyctea scandiaca*). 2012 was considered an irruptive year for this arctic inhabitant, with large numbers of individuals moving south along a broad front (continent-wide) and overwintering in open fields and along large water bodies within the continental United States, with one individual documented as far south as Oklahoma. A total of three separate snowy owls were observed along the Lake Erie coast during the winter survey effort (Figure 30).

Figure 30. A wintering snowy owl observed at BUF101 on January 22, 2012. Photo by MJM.

Figure 31. Migrating mergansers along coastal Lake Erie. Photo by Michael McGraw.

4.3 Herpetofauna

Similar to the bird community, the majority of reptiles and amphibians observed within the AOC are highly adaptive and can be found in urbanized settings with the exception of 1 species, eastern spiny softshell (*Apalone s. spinifera*). This species is typically intolerant of poor water quality, specifically low-oxygen conditions (Ernst et al. 1994). Due to its soft shell, osmoregulatory capabilities are very different from other species resulting in higher permeability (Bentley and Schmidt-Nielsen 1970) and, thus, higher susceptibility to external conditions. Both fish and aquatic insects appear to be critical food sources for spiny softshells (Cochran and McConville 1983). Structural requirements include soft river bottoms, aquatic vegetation beds, mud flats/sandy banks, and submerged trees with limbs. Additionally, it requires specific river bank substrate, aspect, and canopy densities to successfully nest. Nesting occurs in May-June. Since nesting sites are typically river banks, disturbance in urbanized locations by people (fishermen and others) during this time may inhibit use of otherwise suitable nesting locations. NYSDEC is aware of the occurrence of eastern spiny softshell and is currently investigating the status of spiny softshells in the lower Buffalo River AOC via radiotelemetry (Roblee, personal communication). Nesting habitat has already been included in shoreline restoration plans for at least one location in the AOC.

Salamanders were not observed during this survey effort. Two species, blue-spotted salamander (*Ambystoma laterale*) and eastern redback salamander (*Plethodon cinereus*) are documented in adjacent habitats to the AOC. A known population of blue-spotted salamanders exists in the Tifft Nature Preserve, located southwest of the Riverbend site. This species requires a robust organic layer (O horizon), significant woody debris at varying decayed states, and contiguous forested upland (foraging/overwintering) and fishless/ephemeral ponds (breeding/egg-laying) habitats (Petranka 1998). This species typically does not inhabit urbanized landscapes and the presence of this species within the greater Buffalo urban area is an important contribution to local natural history. No typical habitat for blue-spotted salamanders is currently present within the AOC boundary. Detection probabilities of salamanders are relatively low (Bailey et al. 2004) and, therefore, may require a more intensive survey effort to confirm presence/absence of these species within the AOC. That said, considerable effort was made to locate these species within the AOC in 2012, suggesting an inhibition of colonization, likely due to a wide range of potential inhibitive biotic and abiotic variables, such as predation, incompatible soils/soil compaction, lack of woody debris, corridor fragmentation (CSX rail yards, roads, etc.), and a lack of suitable egg-laying pools (for *A. laterale*). Numerous rail lines and maintenance roads run parallel to each other creating a considerable barrier/inhospitable conditions between Tifft NP and the Riverbend site for terrestrial salamanders which likely currently inhibit colonization from the Tifft population into the AOC. Access to other immediately adjacent land within the AOC (CSX property) was not accessible during this study (Appendix I, Map 7).

Eastern redback salamanders are a more adaptive species, in that they do not require a water body to lay eggs, and therefore have a much wider range of tolerable habitat conditions. However, a critical requirement is decaying/downed woody debris for laying eggs (Petranka 1998), which is largely absent from most AOC habitat types (with the exception of forested floodplain sections). Habitat fragmentation and predation (by birds, small mammals, and mesocarnivores) are also potentially inhibitive variables.

The known geographic range of shorthead garter snakes is within northwestern Pennsylvania and extreme southwestern New York. This species prefers meadow, fields, and hillsides within the Allegheny Plateau (Tennant 2003). They have a strict diet preference for earthworms, but have also been documented predating frogs, insects, and salamanders (Tennant 2003). It is unlikely that the Buffalo population is native. Historical coal freighting from northwestern PA likely translocated a breeding population which has persisted in the region for the past 5+ decades (Roblee, NYDSEC, personal communication). Shorthead garter snakes have been documented in numerous locations surrounding the large CSX rail yard, which is succinct with this speculation. Current NYSDEC range maps do not reflect this population but do recognize an introduced population in Binghamton, NY (NYSDEC Range Map Link). Although the AOC population is likely a non-native range expansion it is a harmonious contribution to local natural heritage and at this point should be recognized formally. The first shorthead garter snake observed during the survey effort was on May 10, 2012. The animal was found dead (recently killed) along the steep bank of the ship canal near BUF103. Puncture marks behind the head and along the mid-body were suggestive of raptor or house cat predation. The fact that this species was observed was a seemingly abnormal occurrence (not within the documented geographic range) so morphological observations were documented to confirm identification (Appendix XI). The specimen was then taken to NYSDEC Buffalo office where Ken Roblee, NYSDEC Herpetologist documented it as a voucher specimen.

When considering herpetofauna as related to delisting criteria, the best opportunities exist with amphibian and riverine turtle populations. Creation of isolated wetlands (specifically ephemeral pools), reducing habitat fragmentation (by increasing natural area connectivity), and improving in-river aquatic ecosystems (via dredging contaminated soils, restoring submerged aquatic vegetation beds, and creating shallow water/cove emergent marshes) are key critical habitat enhancements which should be included in AOC restoration activities

4.4 Mammals

Small Mammal Trapping – Highest small mammal abundance and density documented via Sherman traps were found within off site locations (Coastal Lake Erie and Seneca Bluffs, respectively). The diversity is likely correlated to the diversity of plant species and habitat types available at Seneca Bluffs. TCS efforts revealed high densities of Peromyscus sp. on site, especially at the Riverbend and Porkpie sites, which was not accurately reflected in the Sherman live trapping effort. Also, short-tailed shrews were observed onsite during TCS at Bailey Woods, Riverbend, and Smith Street, but only documented during the small mammal trapping effort at Seneca Bluffs. By restoring forests and fields and creating emergent marsh wetlands within the study area to reflect more diverse, native vegetative communities free of invasive plant species will improve the probability of a wider distribution of native small mammals.

Mink – American mink is considered a keystone species because of its ability to influence small mammal and other prey source populations. Although native, overpopulations of mink within an area can have significant negative impacts to extant faunal populations. As an adaptable swimmer and efficient predator, mink have been responsible for island-nesting bird colony failures by voraciously predating nests and chicks (an ongoing issue which is documented at a common tern nesting colony on the ice break wall in Lake Erie just west of the AOC). In the Lower Buffalo River watershed this species is native and its presence is encouraged. The results of this study suggest a low-density population of mink that currently occur within the AOC. That said, use of the AOC may be currently limited to foraging and travel corridor use, since no burrows or other evidence of denning were observed in the study area. A probable den site was located at the reference location which could reasonably support the very same animal(s) whose tracks were observed along the riverbank within the study area (the two observations are less than ½ mile from each other). A key limiting factor for the disbursal and subsequent population growth of American mink within the AOC may be the lack of suitable shoreline habitat and/or the distances between adequate shoreline habitat (since mink will use the River as hunting grounds and as a travel corridor). Long sections of dredged river with no natural shoreline are likely inhospitable for this species. Based upon these observations and resultant inferences, it is likely that improvement of the riverine aquatic ecosystem and shoreline habitat within the AOC will result in an increase of American mink within the study area.

Bats – The two of eight potentially present bat species were documented onsite. The natural history of these animals suggests a good population of flying insect prey base in the AOC. This preliminary bat assessment suggests that a more robust bat survey may be worth investing in moving forward. This study was unable to assess the role of abandoned buildings for roosting bats within the AOC due to site access issues. However, it is a highly reasonable assumption that bats utilize abandoned buildings within the AOC. European studies have shown that some bat species regularly choose human constructions over available tree roosting sites (Mazurska and Ruczynski 2008). Several U.S. studies have also found that large, abandoned buildings taller than surrounding structures providing warm, stable internal temperatures create ideal day and night bat roosting areas (Mazurska and Ruczynski 2008; Rhodes and Johnson 2006; Entwistle et al. 1997; Mager and Nelson 2001; Neubaum et al. 2007; Vander Pol 2012). When considering delisting criteria, efforts to leave roost trees (dead trees, live shagbark hickory) within the AOC should be included where possible. Bat boxes can be erected in locations where buildings are removed to encourage the retention of site use by bats. There is also an opportunity to incorporate urban ecology features which may provide value for bats (e.g. building ruins which may remain as part of a site design).

Squirrels – There is an overpopulation of gray squirrels within forested areas in the AOC. Ecological restoration will aid in balancing this population, such as restoring the groundstory and understory strata of degraded and park-like woodlands (currently impacted by either invasive species or mowed lawns) and increasing the patch size of onsite woodlots. Residents and businesses within the AOC should be encouraged to squirrel-proof their trash cans. Increasing predation by raptors, specifically by encouraging more nesting pairs of red-tailed hawks within the AOC, may not be effective due to the ease of foraging in nearby higher squirrel densities and highway edges.

Deer – A breeding population of white-tailed deer exist in the AOC (Figure 32). Deer in urbanized settings pose a risk for vehicular traffic and likely influence vegetative composition within the AOC from browse and grazing activity. Efforts will need to be made to deter herbivory at restoration sites, especially in the eastern portion of the AOC (from Katherine Street Peninsula eastward).

Figure 32. A nearly pure albino white-tailed deer observed during the survey effort at an undisclosed location. Photo by Nathan Grosse.

5. Recommendations

Below are generalized, bullet-listed recommendations for ecological restoration, existing landscape maintenance, and sustained scientific documentation to promote continued and/or increased wildlife diversity within the Buffalo River AOC. These recommendations are prioritized by order of occurrence in the report (first being highest priority). More detailed recommendations for specific locations within the AOC can be provided separately from this report if requested, based upon the ecological understandings gained from this study.

- ***Restore/create native riparian forest wherever possible***

    The highest diversity of onsite wildlife in 2012 was observed within riparian forest remnants. Increasing patch size of existing riparian forest and dedicating new/historic areas to this intended ecological target will increase abundance and diversity of vertebrate wildlife as well as many other ecological functions. A prioritizing factor for targeting riparian forest restoration is adjacency to existing or potential forest (riparian or upland) to create contiguous forest blocks and corridors within the AOC.

- ***Increase wetland acreage within the AOC by creation of river-associated and isolated wetlands, both emergent and forested, if possible.***

    - Consider evaluating the Bailey Woods wetland remnant for restoration to a river-associated emergent marsh

    - Identify locations where excavations (to at least the river's high water mark) can be made within the historic floodplain of the Buffalo River as created wetland sites

    -Engage volunteers in removal of invasive species/native planting within pocket wetlands onsite to encourage suitability for breeding amphibians and wetland associated passerine.

- ***Increase littoral shelf and land/river connectivity wherever possible***

    A lack of shallow river areas from dredging activity has reduced submergent aquatic vegetation beds within the River. Improving, restoring, and re-creating this structural component will likely promote an increase in the abundance and diversity of riverine trophic web biomass-contributing organisms.

- ***Maintain current low-height grassland habitats within the AOC***

    Onsite low-height grassland locations currently support numerous grassland and barren land breeding bird populations. Many of these species are in regional and even global decline. Additionally, these open-canopied habitats are supporting the onsite snake and native small mammal populations as well as ample insect populations/primary consumers (thusly, a strong trophic web). A loss in grassland habitat will likely result in a reduction of all target faunal assemblage diversity (reptiles, amphibians, birds, and mammals).

- ***Design locations where successional forest habitat may be a dominating land use type for approximately 20 years (end use = mature forest) as well as potentially considering designing shrubland patches within the AOC landscape***

Many bird species prefer the high vegetative production within successional and shrubland landscapes, including species in regional and global decline. Shrubland/Successional Field habitat type is nearly non-existent currently in the AOC (with the exception of PorkPie). Consider pairing these locations with existing or future forest habitats to ultimately increase size and quantity of forest blocks in the AOC as well as 'softening' edges of forest/non-forest ecotones.

- ***Establish prioritized, site-specific invasive species management plans for various locations using volunteers, grants, and City Parks staff resources including;***

  - Mechanical and chemical removal of Japanese knotweed within riparian landscapes

  - Chemical treatment of invasives/non-native species paired with native warm-season grass seed planting of onsite mugwort-invaded meadows

  -Removal on non-native trees via stump treatment and/or drill-and-fill methods (the latter leaving standing snags as wildlife habitat)

- ***Increase basking locations for riverine turtles.***
  Consider using felled/anchored trees (preferably with submerged branches/crowns) and cultural/artistic elements (building ruins, re-purposed materials, etc.)
- ***Conduct follow-up wildlife surveys in years 3, 5, 10, 15, and 20, or consecutive (years 1-10) to maximize the value of this data set and generate a robust understanding of the vertebrate fauna inhabiting the Buffalo River AOC.***
- ***Consider generating articles for publishing using gathered biological data.***

6. Conclusions

Vertebrate fauna observed within the Buffalo River AOC in 2012 consists largely of generalist and urban-adapted species. Evidence of habitat preferences by other wildlife (ex. grassland and riparian forest birds) suggests that land use planning (conserving, acquiring, and maintaining spaces for wildlife habitat) and active ecological restoration can increase species richness and alter abundance composition to better reflect naturalized communities and achieve target BUI delisting goals.

Avifauna - The hydrologic connectivity to Lake Erie and intense avifaunal migration events lend the Buffalo River location to a wide array of potential faunal diversity increases associated with specific ecological restoration and land use compatibility. For example, it is perceivable that many waterfowl species whose geographic breeding ranges overlap the Buffalo area could potentially begin nesting on site by increasing the land/river connection (to accommodate the part land/part water territories of many dabbling duck species) and by increasing the amount of emergent wetland acreage and submergent aquatic vegetation beds within the AOC. Also, passerine migration through the site is strong and opportunistic males whose geographic breeding ranges overlap the AOC will surely set up territories in restored fields, forests, and wetlands when preferred condition are available. Specific bird species should be selected at targets aligned with relevant restoration plans to serve as a performance standard and aid in achieving BUI delisting criteria.

Herpetofauna – The presence of shorthead garter snake and eastern spiny softshell populations are notable. Monitoring the progress of a potential re-colonization of spiny softshell to the lower Buffalo River may serve as a valuable metric for water quality, riverine ecosystem quality, and river bank habitat condition, as this can be considered an ‘umbrella’ species for riverine ecosystems. No blue-spotted salamanders were observed during the 2012 study. Migration of nearby blue-spotted salamander populations into restored landscapes with a direct connection to Tifft Nature Preserve is possible and exists as a good restoration opportunity to promote this species within the AOC. The creation of breeding pools for amphibians will likely result in a measurable increase in frog and toad populations, which are a critical food source for many other animals. Due to their role in the trophic web, increases in amphibian populations have been previously correlated with increases in diversity and abundance of bird and mammal species.

Mammals – Improved ecological connectivity and condition will likely increase site mammal diversity. Improvements to water quality of the Buffalo River could potentially increase the mustelid population onsite. Norway rats were not observed in fallow/naturalized spaces within the AOC (typical in most urban lots) but are likely present within the AOC. Other than mink, management of other mammal species should be considered through a holistic ecosystem restoration approach (improve native autogenic ecosystem function and populations will adjust accordingly). For mink, specific actions to improve preferred river and shoreline conditions may be worth investing in.

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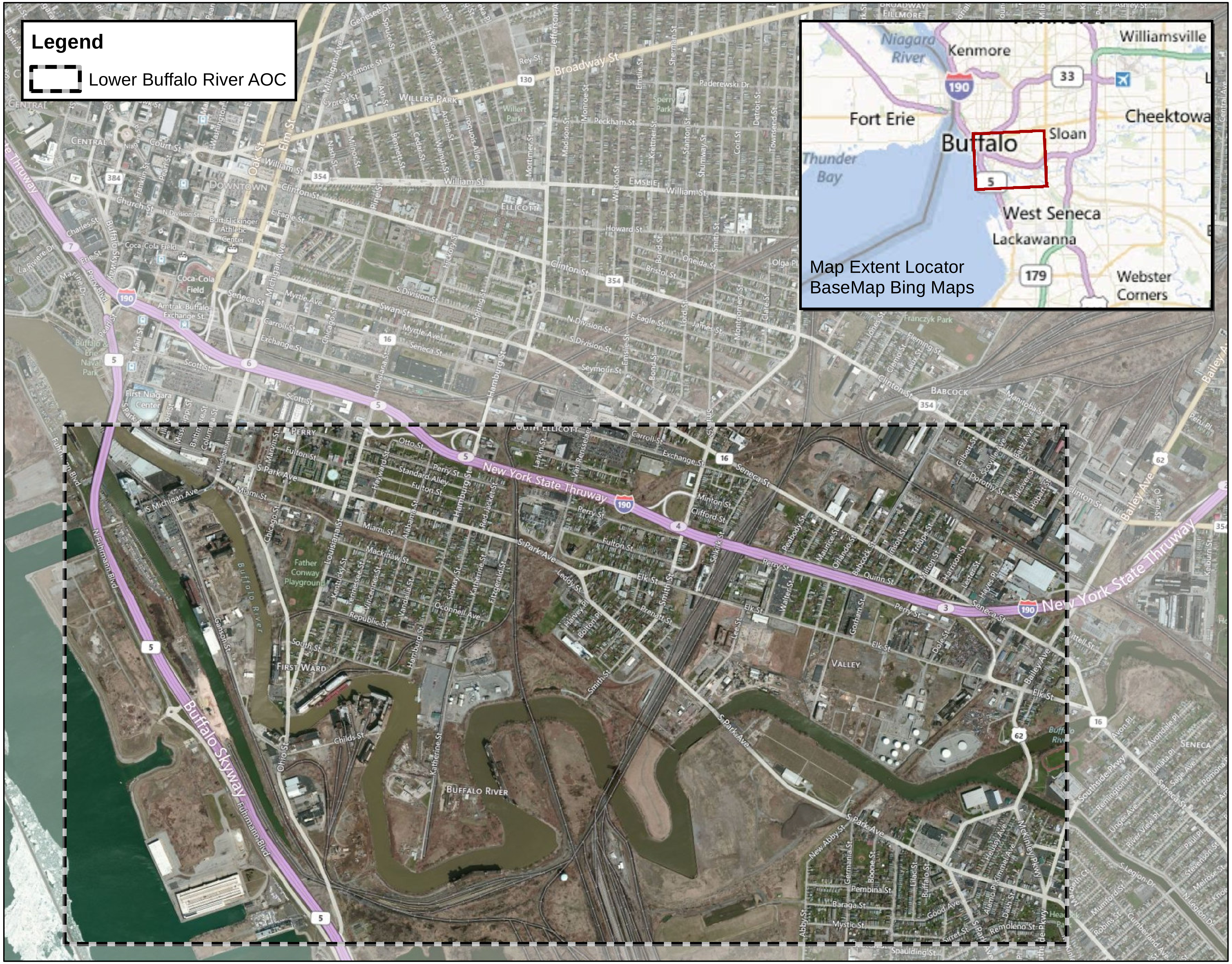

Map 1

Lower Buffalo River Area Of Concern

Map No. and Title

1 Lower Buffalo River Area Of Concern
2 Avifaunal Point Count Survey Locations
3 Calling Anuran Survey Locations
4 Time and Area Constrained Search Polygons
5 Walking and Driving Transects
6 Mammal Sampling Locations
7 Inaccessible Locations During Survey

Lower Buffalo River Wildlife Survey Buffalo, NY

Map By: David Aslesen
Map Date: 1/31/2013

Revisions		
No.	By	Date Description
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Data Sources:
BaseMap: BingMaps Aerial and Roads
LBR AOC- Area Of Concern by AES

UTM NAD83 Zone 18, meters
AES Project #: 11-0543
Map01_LowerBuffaloRiverAOC.mxd

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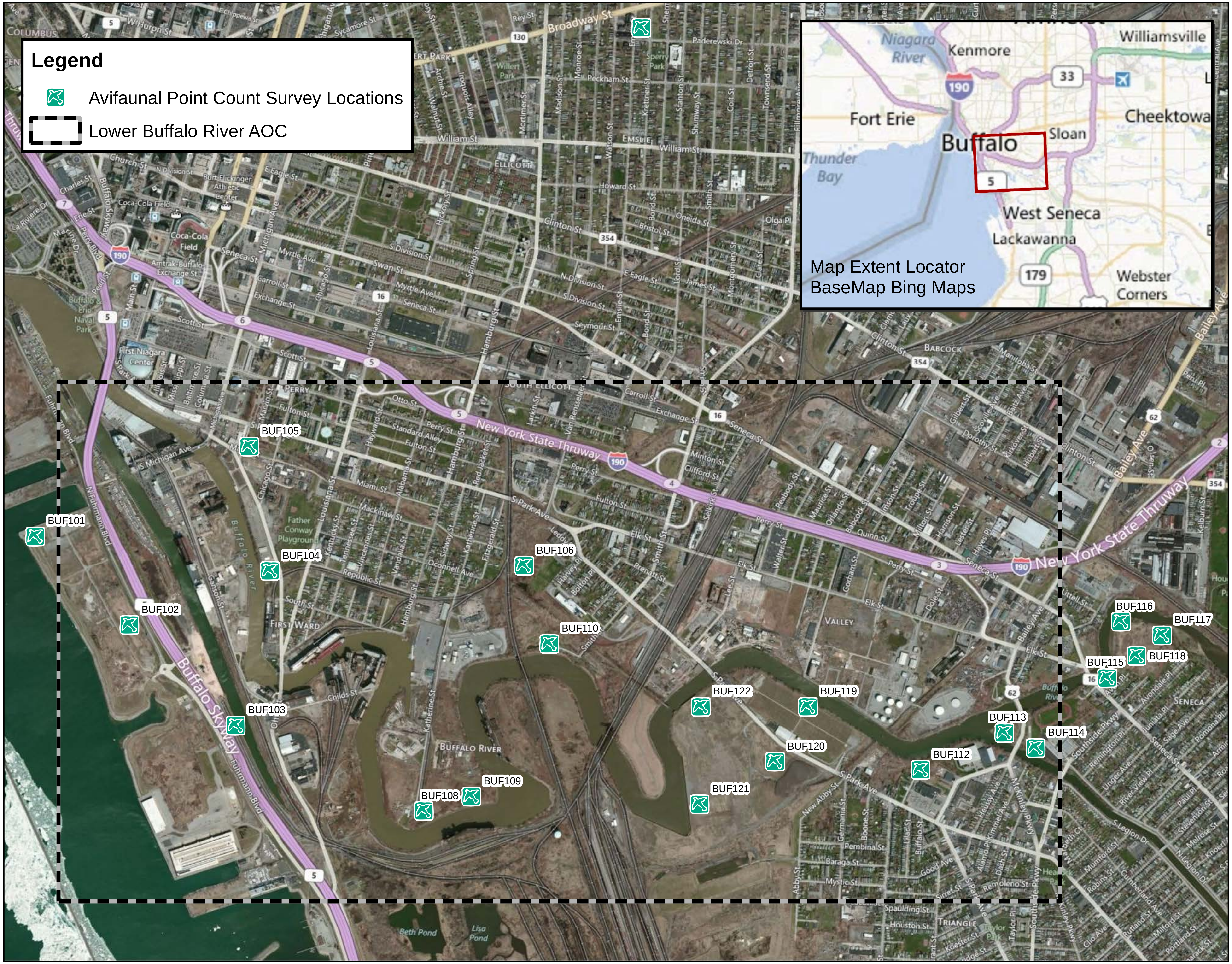

Map 2

Avifaunal Point Count Survey Locations

Map No. and Title

1. Lower Buffalo River Area Of Concern
2. Avifaunal Point Count Survey Locations
3. Calling Anuran Survey Locations
4. Time and Area Constrained Search Polygons
5. Walking and Driving Transects
6. Mammal Sampling Locations
7. Inaccessible Locations During Survey

Lower Buffalo River Wildlife Survey Buffalo, NY

Map By: David Aslesen
Map Date: 1/31/2013
Revisions

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Data Sources:
BaseMap: BingMaps Aerial and Roads
LBR AOC- Area Of Concern by AES

UTM NAD83 Zone 18, meters
AES Project #: 11-0543
Map01_to_07_LowerBuffaloRiver.mxd

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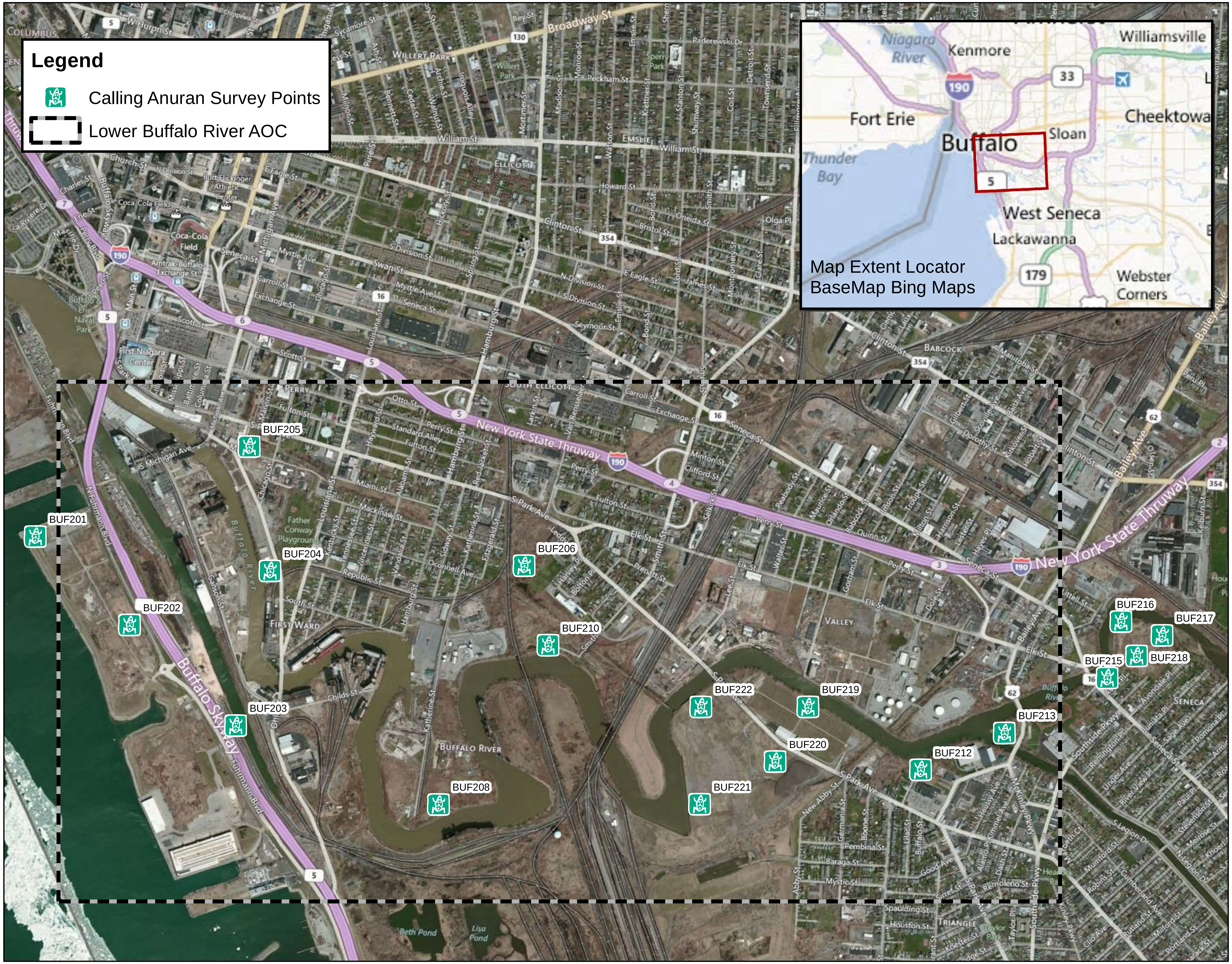

Map 3

Calling Anuran Survey Locations

Map No. and Title

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2. Avifaunal Point Count Survey Locations
3. Calling Anuran Survey Locations
4. Time and Area Constrained Search Polygons
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Lower Buffalo River Wildlife Survey Buffalo, NY

Map By: David Aslesen
Map Date: 1/31/2013

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Data Sources:
BaseMap: BingMaps Aerial and Roads
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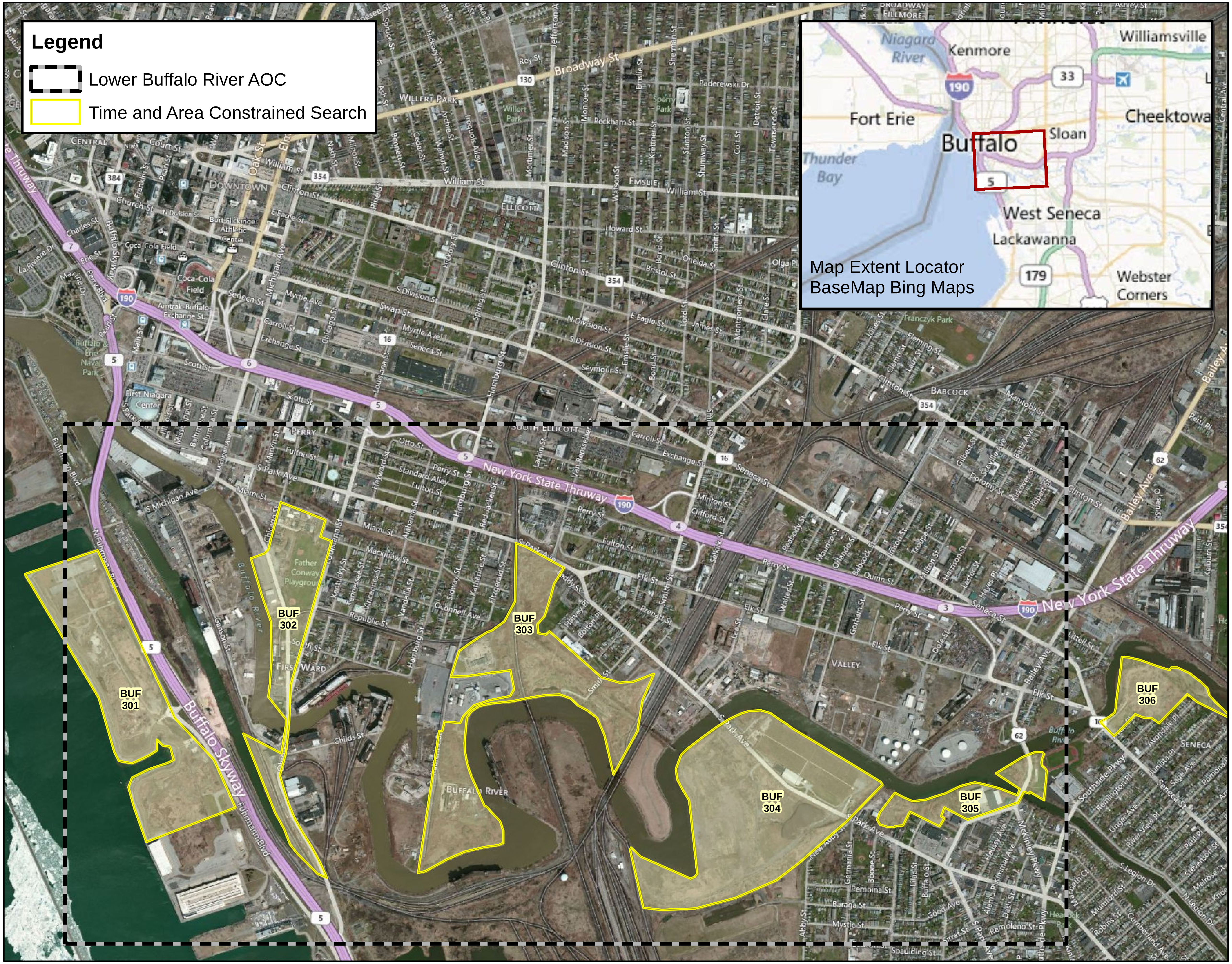

Map 4

Time and Area Constrained Search Polygons

Map No. and Title

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7 Inaccessible Locations During Survey

Lower Buffalo River Wildlife Survey Buffalo, NY

Map By: David Aslesen
Map Date: 1/31/2013

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Data Sources:
BaseMap: BingMaps Aerial and Roads
LBR AOC- Area Of Concern by AES

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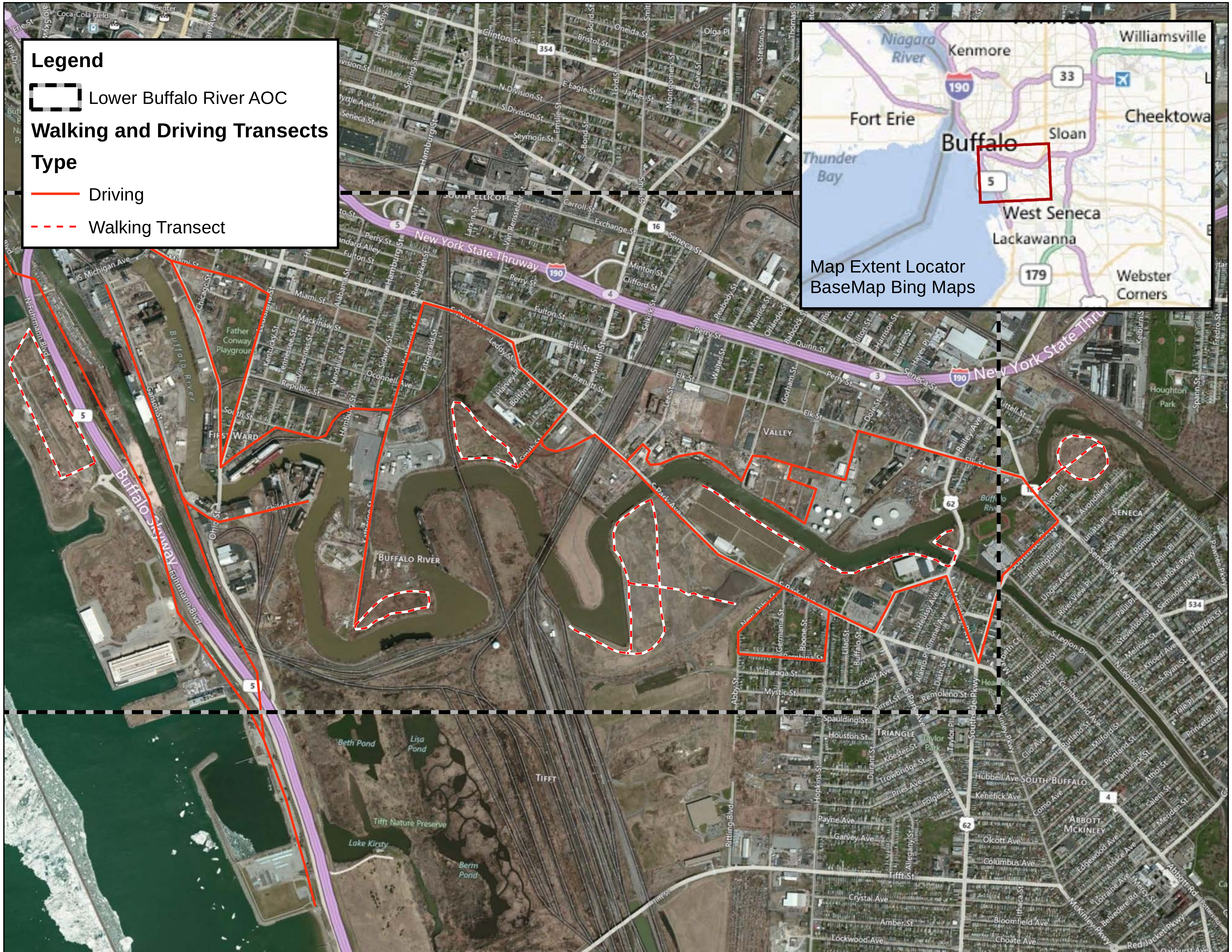

Map 5

Walking and Driving Transects

Map No. and Title

1. Lower Buffalo River Area Of Concern
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Lower Buffalo River Wildlife Survey Buffalo, NY

Map By: David Aslesen
Map Date: 1/31/2013

Revisions

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Data Sources:
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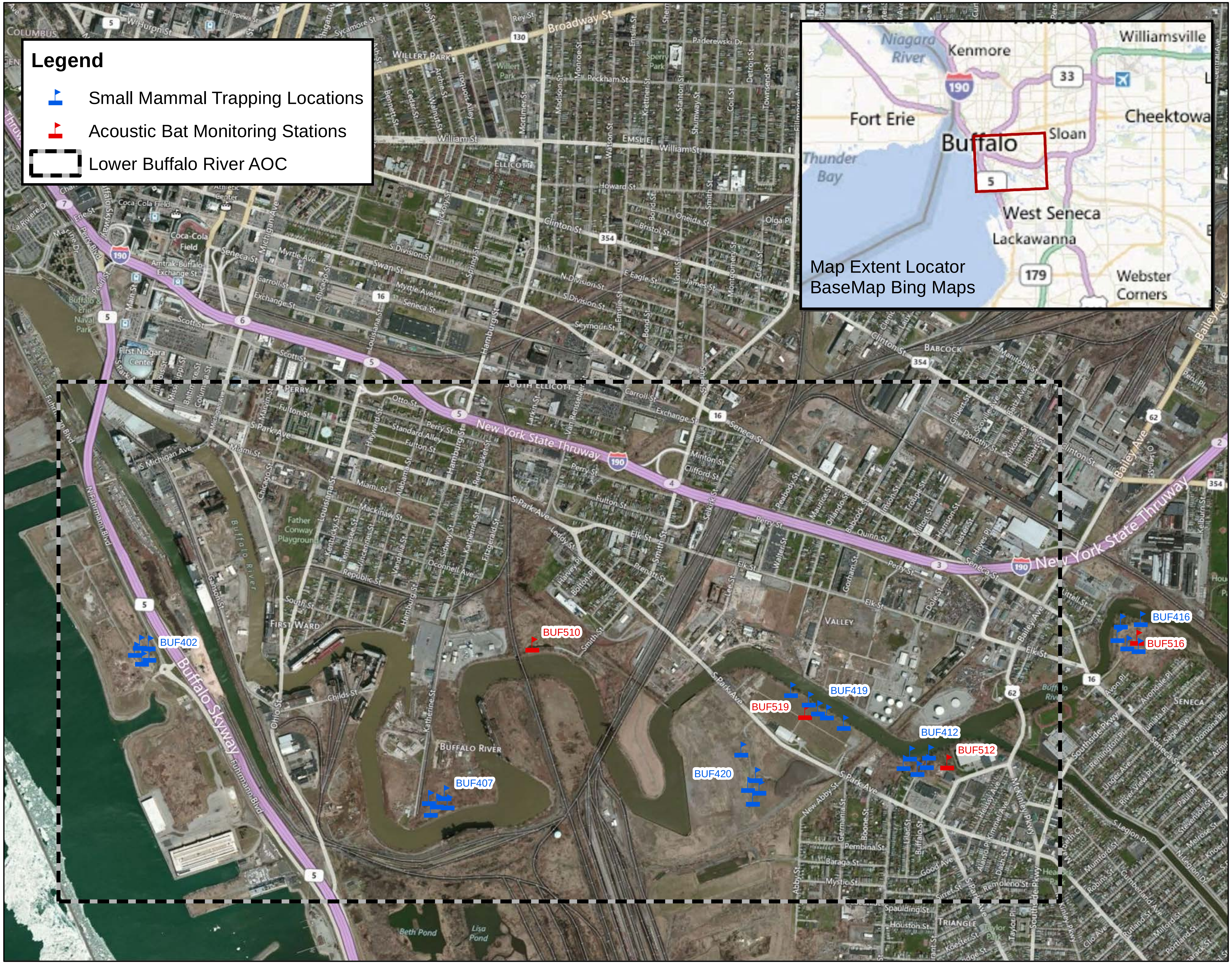

Map 6

Mammal Sampling Locations

Map No. and Title

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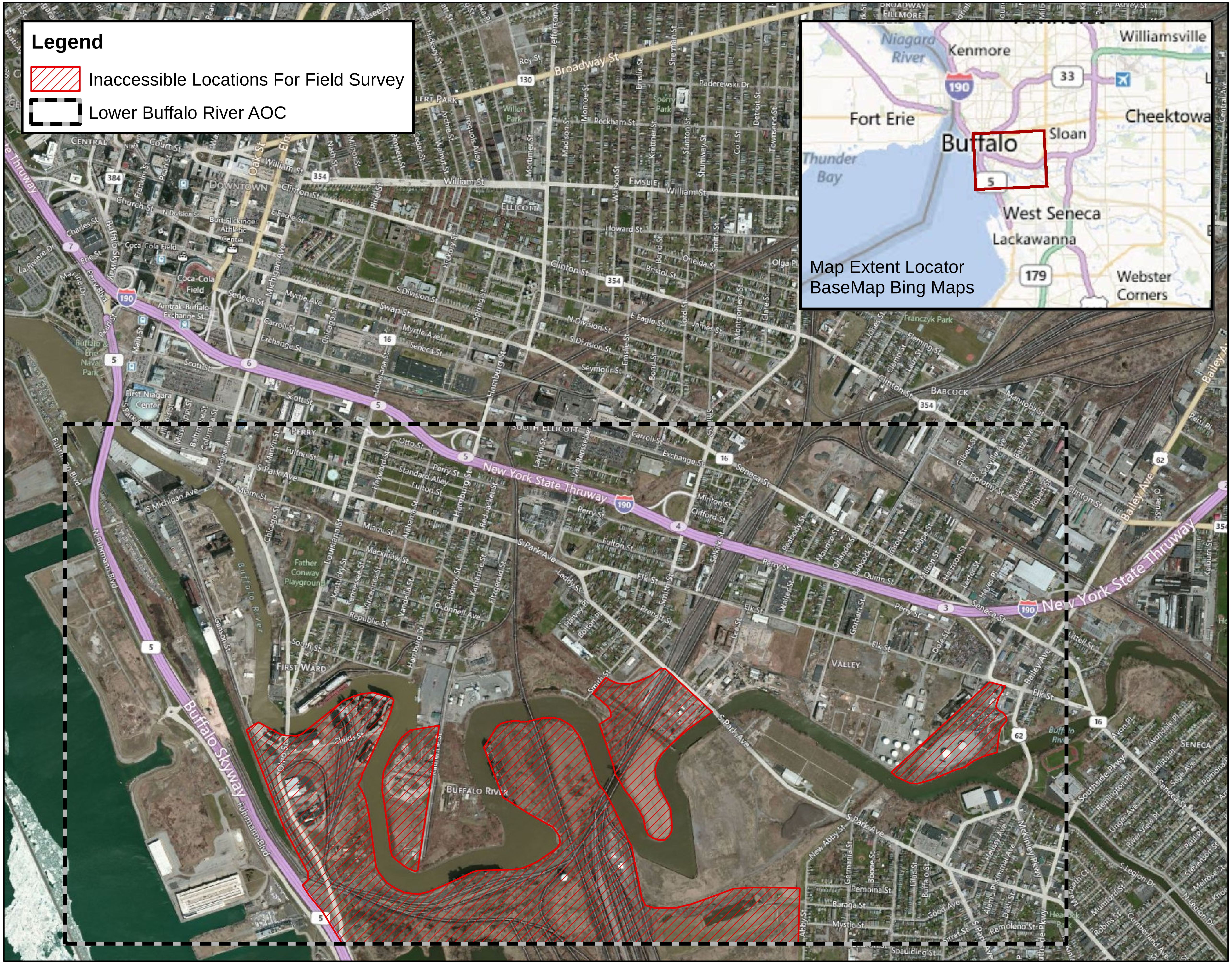

Map 7

Inaccessible Locations During Survey

Map No. and Title

1 Lower Buffalo River Area Of Concern
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Lower Buffalo River Wildlife Survey Buffalo, NY

Map By: David Aslesen
Map Date: 1/31/2013
Revisions

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Data Sources:
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Appendix II – Quality Assurance Project Plan (QAPP)

Lower Buffalo River Wildlife Survey

Quality Assurance Project Plan

Prepared For:

U.S. Environmental Protection Agency
Region 2
290 Broadway
New York, NY 10007-1866

Prepared by:

Applied Ecological Services
1100 East Hector Street, Suite 398
Conshohocken, PA 19428

On Behalf of:

Buffalo Niagara RIVERKEEPER
1250 Niagara Street
Buffalo, NY 14213

October 3, 2011
Version 2

1.0 Approval Page

Frederick Luckey, Project Officer
U.S. EPA Great Lakes National Program Office

1/23/12
Date

Donna Ringel, Quality Assurance Officer
U.S. EPA ~~Great Lakes National Program Office~~ Region 2

1/25/12
Date

Katherine Winkler, Buffalo River RAP Project Manager
Buffalo Niagara Riverkeeper

2-7-12
Date

Katy Brown, Quality Assurance Officer
Buffalo Niagara Riverkeeper

2-7-12
Date

Michael McGraw, Project Manager/Lead Biologist
Applied Ecological Services, Inc.

3/1/12
Date

Jason Carlson, Quality Assurance Officer
Applied Ecological Services, Inc.

2/22/12
Date

2.0 Table of Contents

Acronyms and Abbreviations

AES	Applied Ecological Services
CC	Conservation Connects
BNR	Buffalo Niagara RIVERKEEPER
BRRAP	Buffalo River Remedial Action Plan
BUI	Beneficial Use Impairment
DQO	Data Quality Objective
ERMP	Buffalo River Ecological Restoration Master Plan
FSBR	Feasibility Study for the Buffalo River
IJC	International Joint Commission
LBR	Lower Buffalo River
GIS	Geographic Information System
GLNPO	Great Lakes National Program Office
GLRI	Great Lakes Restoration Initiative
GLWQA	Great Lakes Water Quality Agreement
NYSDEC	New York State Department of Environmental Conservation
QAPP	Quality Assurance Project Plan
QA	Quality Assurance
QA / QC	Quality Assurance/Quality Control
USEPA	U.S. Environmental Protection Agency

3.0 Distribution List

U.S. Environmental Protection Agency
Region 2
290 Broadway
New York, NY 10007-1866
Attn: Frederick Luckey

Buffalo Niagara Riverkeeper
1250 Niagara Street
Buffalo, NY 14213
Attn: Katharine Winkler, Katy Brown

Conservation Connects
P.O. Box 358 · Alexander, NY 14005
Attn: Sheila Hess

USEPA Facilities
Raritan Depot
2890 Woodbridge Avenue
Mail Code: MS22O
Edison, NJ 08837-3679
Attn: Donna Ringel

Applied Ecological Services, Inc
17921 W. Smith Road
P.O. Box 256
Brodhead, WI 53520
Attn: Jason Carlson

Applied Ecological Services, Inc
1100 East Hector Street, Suite 398
Conshohocken, PA 19428
Attn: Michael McGraw

4.0 Project/Task Organization

The Buffalo Niagara Riverkeeper (BNR) will serve as the grant administrator for this project. Technical support for this project is being provided by Applied Ecological Services (AES) via contract with BNR. Conservation Connects (CC) will be assisting AES with survey efforts. All project team members are responsible for adhering strictly to all protocols in this Quality Assurance Project Plan (QAPP); further, team members are required to obtain approval from the Project Manager at his or her agency in advance of any deviation to Quality Assurance (QA) protocols. In addition to the QA/QC activities detailed in this QAPP document, AES has internal QA systems and plans in place that will be used for all project activities.

Specific details about the roles and responsibilities of team members for this project are provided below.

Katherine Winkler (BNR), Project Grant Administrator. Ms./Mrs. Winkler will coordinate tasks across all agencies contributing to this project and will serve as the primary point of contact for the overall project. In addition, she will serve as the primary point of contact for BNR and maintain coordination with the biological contractor (AES).

Katy Brown, (BNR), QA Officer. Ms./Mrs. Brown will serve as the QA Officer for BNR. She will be responsible for ensuring that all work conducted in execution of the project is relevant and timely in reference to the goals and expectation of BNR.

Michael McGraw (AES), Project Manager/Lead Biologist. Mr. McGraw will conduct and provide oversight for the collection of biological data, ensuring completion of tasks and deliverables according to the project schedule. Mr. McGraw will serve as AES's primary point of contact for the project.

Sheila Hess (CC), Co-Project Manager. Ms./Mrs. Hess will provide QA/QC of sampling point locations, biological data collection, and data analysis. In this role, she will be co-managing the project with Mr. Michael McGraw

Jason Carlson (AES), QA Officer. Mr. Carlson will serve as the QA Officer for AES. He will be responsible for ensuring the full implementation of all applicable QA activities required under this project as provided in this QAPP.

Frederick Luckey, USEPA Project Officer. Mr. Luckey will serve as the Project Officer on behalf of the U.S. EPA Great Lakes National Program Office.

Donna Ringel, USEPA QA Officer. Ms./Mrs. Ringel will serve as the QA Officer on behalf of the U.S. EPA Great Lakes National Program Office. She will be responsible for ensuring the full implementation of all applicable QA activities required under this project as provided in this QAPP.

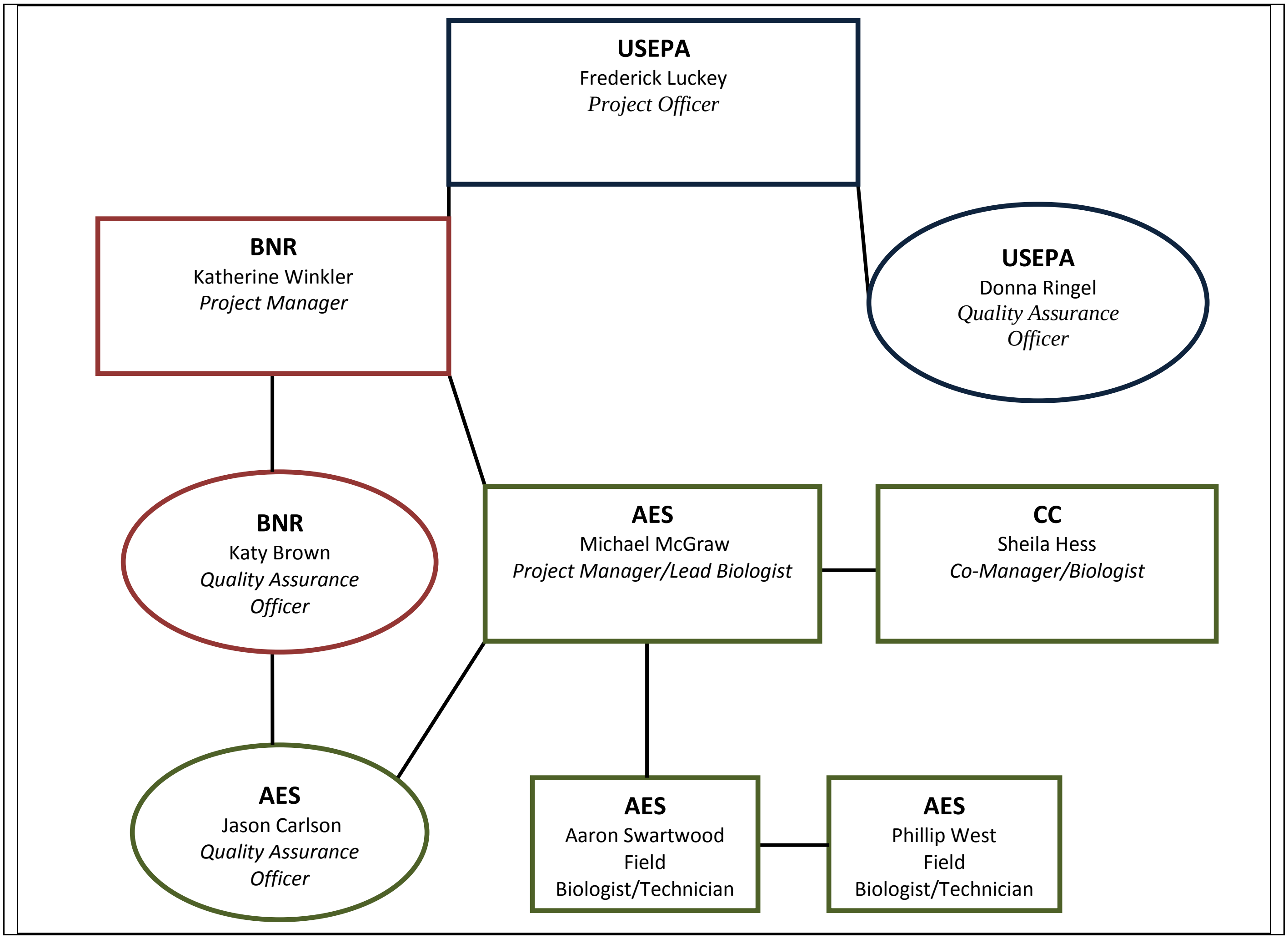


Figure 1. Organizational Chart.

5.0 Special Training Requirements/Certification

No special certification is required for this project beyond the already high degree of academic training and professional experience that AES and CC staff has obtained in order to fulfill job requirements commensurate with their current assignments. The AES and CC staff has a wealth of experience and education in wildlife biology, restoration ecology, population biology, Laurentian Great Lakes ecosystems, northeastern United States ecosystems, herpetology, avifaunal biology, and GIS. AES and CC staff involved on this project are skilled project managers as well as experienced scientists with many years experience conducting field biology.

A NYSDEC Scientific Collector's Permit will be obtained for the project by the lead biologist (Mr. McGraw)

6.0 Project Context, Problem Definition and Background

6.1 Project Context/Definition

Currently, no baseline data exists to assess the status of wildlife populations within the LBR AOC. The expressed intention of the wildlife survey detailed within this plan is to generate empirical data sets of extant species richness and abundance for three target vertebrate assemblages (mammals, herpetofauna, and avifauna) within the Lower Buffalo River (LBR) Area of Concern (AOC). A secondary intention is to provide a standardized and repeatable protocol for future biological sampling within the LBR AOC. The results of the 2011-2012 survey effort will be the baseline data within a comparative metric in determining AOC Beneficial Use Impairment (BUI) status (namely, BUI #s 3 & 14). As further detailed within this plan, the surveys will be strategically linked to existing natural spaces adjacent to and/or within the LBR as well as proposed and existing ecosystem-related activities (such as aquatic and terrestrial habitat enhancements, ecological restoration initiatives, and pollutant remediation) set forth within in the Buffalo River Remedial Action Plan (RAP), ensuring that the data gathered will best serve the intentions of the United States Environmental Protection Agency (USEPA), BNR, the LBR, and associated ecosystems as specified within the Buffalo River (RAP).

6.2 Background

Situated between the Onondaga and Portage Escarpments, the Buffalo River Watershed lies within the Erie Plain of western New York, an area steeped in rich cultural and natural history. Historically, the convergence of the Cayuga, Buffalo, and Cazenovia Creeks was a sight of bountiful fishing, vast forested landscapes, and rich populations of plant and wildlife. The progression of Buffalo into a major industrial city in the early 19th and 20th centuries altered much of the natural landscape in the region, particularly in and around the LBR. Industrial pollution remains as a lasting legacy of the industrial and post industrial eras. Over the centuries, development and changes in the lakes themselves and associated river systems have left many of these soft edges hardscaped and bulwarked. Marshes and other coastal wetlands have been channelized, impounded and altered by invasive species. Transportation systems, industrial infrastructure, and other development has removed from lake edges the transitional wetland-upland systems and broken the once continuous habitat connections to rivers and other aquatic systems. These sensitive ecosystems where water meets land not only provided critical nutrient processing, hydrologic control (including natural stormwater management), and niche-partitioning of resident floral and faunal assemblages, but also played a most critical role in the migratory success of millions of migrant shorebirds and waterfowl each year.

The results of anthropogenic impacts on the LBR ecosystem and many other areas within the Great Lakes led to an international response in efforts to cease continued degradation of water quality within the Laurentian Great Lakes Region. The USEPA along with the United States and Canada International Joint Commission (IJC) generated the Great Lakes Water Quality Agreement (GLWQA) in the 1980's which required the development of a RAP for each of the 43 AOCs identified within the GLWQA. Within each RAP, BUIs are identified as impaired or delisted for each AOC. Of the 14 BUI's listed within the Buffalo River RAP, nine are currently impaired, three of which are directly related to fish and wildlife habitat and populations. Of these, two are directly related to the survey efforts within this plan (degradation of fish and wildlife populations & loss of fish and wildlife habitat). BNR continue to work in conjunction with federal and state agencies towards the ecological and aesthetic revitalization of the LBR. In 2003, the BNR was awarded the responsibility of coordinating the implementation of the Buffalo River RAP. As part of this implementation, they have hired AES to perform the studies as described within this plan. As proposed dredging, habitat enhancement, and ecosystem restoration efforts are implemented, a perceived goal is that wildlife habitat (both biotic and abiotic components) and, subsequently, wildlife populations will improve within the LBR AOC (Figure 2). This study will outline the basis from which to prove this response over time.

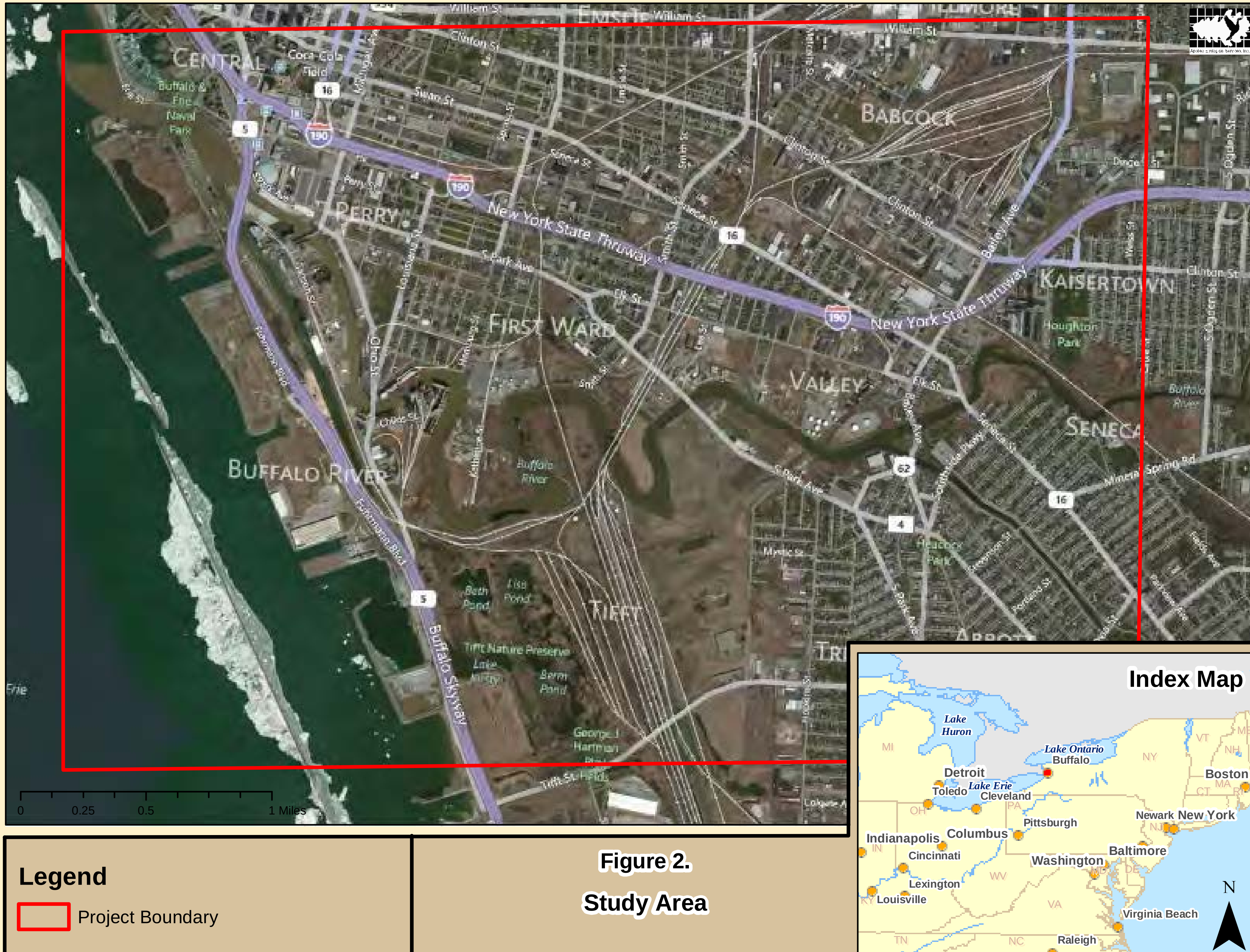
The direct effect on wildlife populations is the impairment and/or lack of historically occurring critical habitat. For the expressed purposes of this survey effort (and in attempts to ensure that all data collected is directly relevant to the GLWQA/RAP goals), habitat is a species-specific term and is defined as "the place where a micro-organism, plant or animal species lives". More importantly, critical habitat is defined "as a place which provides resources to a species whose presence is dependent upon these resources and, in the absence of these resources, would not support viable populations of said species. A home range is the area which contains all critical habitat resources required to fulfill a species' life history. Critical habitat resources for the purposes of this effort are the following:

<u>Avifauna</u>
- Nesting Habitat (breeding population)
- Foraging (breeding, migratory[1], wintering)
- Shelter/Structure/Roosting (breeding, migratory[1], wintering)

<u>Herpetofauna</u>
- Hibernacula/Denning Sites
- Foraging Habitat
- Breeding Pools (amphibians)
- Nest-Laying sites (turtles and oviviparous snakes and lizards)
- Rookery Sites (aquatic/semi-aquatic turtles, viviparous snakes and lizards)

<u>Mammalia</u>
- Hibernacula/Den Sites
- Foraging Stations/Middens
- Foraging Habitat

[1] Mortality rates of migratory birds have been linearly correlated with stopover habitat loss/impairment. This issue has become a global conservation concern, thereby defining stopover requirements as critical habitat resources. Due to the historic relevance of the Great Lakes Region for shorebird, passerine, raptor and waterfowl migrations AES will document any identified critical stopover locations still existing within the AOC.



Legend

Project Boundary

Figure 2.

Study Area

6.3 Statement of Project Relevance and Goals

The Great Lakes Water Quality Agreement (GLWQA) is a major federal program intended to protect and restore water quality and related ecosystems within the basin of the Laurentian Great Lakes. The BNR has received funding from the Buffalo River RAP Coordination Fund to conduct variety of investigations relevant to the implementation of the RAP, including a baseline wildlife survey to detect species richness and diversity within the existing habitat of the LBR AOC. This project will gather the necessary faunal data to drive specific ecological restoration/ habitat enhancement efforts as well as provide a standard for comparison of habitat quality and wildlife populations within the AOC, and effort driven by the intended delisting of BUI #s 3 and 14 of the Buffalo River RAP.

The goal of this project is to generate a baseline of empirical data on the existing relative abundance and species richness of mammals, reptiles, amphibians, and birds within the AOC by completing the following:

- Identification of sampling locations throughout the AOC and one off-site reference location.
- Conducting year one surveys at the determined sampling locations.
- Consolidation and analysis of data gathered and prepared within a formal scientific report. This report will detail all sampling methods and provide geo-referenced maps of sampling locations for future replication.

The results will provide the following value to the existing efforts as related to the Buffalo River RAP, ERMP, FSBR, and other relevant technical documents:

- A standardized set of geo-referenced survey locations and repeatable protocols for target fauna inventory within the LBR AOC
- Baseline species richness and abundance data of target fauna for comparison to future data sets
- Key insight on existing faunal assemblage habitat usage and habitat needs within the AOC (which often proves critical in generating the best ecological response to created/enhanced ecosystems)

This development of both spatial and temporal parameters is the framework for monitoring restoration ecology projects proposed within the AOC. In addition to water quality and hydrology, bio-indicators (i.e. target species/faunal assemblages) are an extremely valuable tool to design, merit the success/failure of, and implement critical maintenance and modifications for ecosystem restoration.

7.0 Project/Task Description

Deployment of the project will occur in phases as follows:

AES and CC will conduct scientifically valid methods to determine the presence/absence of three main faunal vertebrate assemblages (Birds, Herpetofauna, and Mammals).

Phase I-Site Reconnaissance, Rapid Ecosystem Assessment and Sampling Location Geo-referencing

To maximize survey value and standardize our data collection, the survey team will conduct an initial site visit with the expressed intention of locating and geo-referencing all locations where data will be collected during the survey effort. Due to the highly urbanized landscape within the survey area, sample locations will be selected in areas where remnant wildlife habitat is most likely to be present, with a focus on areas that have recently been restored/enhanced and proposed restoration/enhancement areas. During site reconnaissance, AES and CC biologists will search the entire survey area to characterize the available wildlife habitat (including man-made structures such as refuse piles, abandoned lots, and building ruins) to support bird, reptile, amphibian, and mammal species of the region. Additionally, offsite locations will be 'scouted' for their potential to serve as a reference natural area to the study. Upon determining a suitable reference natural area it will be selected and concurrently surveyed using identical methods.

Due to the integrated nature of this effort, AES will work with USEPA and BNR to determine the best representation of sampling sites throughout the AOC. Currently, AES is aware of 5 locations which will be sampled due to their direct relation to Great Lakes Legacy Act Projects (Head of City Ship Canal, Katherine Street Peninsula, and Ohio Street) and current habitat restoration efforts (Seneca Bluffs and River Bend)

In a proactive effort, AES has reviewed proposed restoration initiatives within both the ERMP and the FSBR and pre-propose a total of approximately 25 avifaunal sampling locations (Section 10.1, Figures 5, 6, & 7). Upon the completion of Phase I, at least 6 transect and area-constrained survey locations will be identified and mapped for herpetofaunal and mammal search efforts (see Section 10.1, Figure 8 for proposed locations). Exact transect locations and lengths will be determined and geo-referenced during the initial site reconnaissance visit. Transects will consist of both road-cruising/driving transects (2) and walked transects (~4, two on either side of the river). Road-cruising transects will be routes along the roads which nearest border the river on each bank. Their lengths will be slightly longer than the length of the AOC (ends will be at the terminus of the two survey locations which are farthest apart). Each transect will be searched no less than 8 times and no more than 12 during the survey effort. Please consult section 10.2 for transect search methods.

Phase II- Conduct Biological Surveys within the Study Area

Beginning in the fall of 2011 (immediately upon the approval of this QAPP), AES and CC will commence appropriate faunal survey methods. All four seasons will be represented in the survey effort, with Phase II ending in the fall of 2012. Please refer to Sections 10.1 and 10.2 for a description of each survey method to be employed. Upon completion of Phases I and II a final scientific report will be prepared for submission of all data collected.

AES has selected a variety of scientifically valid survey methods to achieve the project goals as described within the Request for Proposals for Technical Consulting Services for a Wildlife Survey in the Buffalo River (NY) Area of Concern (BNR 2011) and further defined within the 'ConsultantGuidance.doc' document electronically mailed August 23, 2011. For each target faunal assemblage, various survey methods are combined to generate a relatively comprehensive assessment, with special emphasis on species highlighted within the above-referenced 'ConsultantGuidance.doc' document. Survey methods for each target faunal assemblage are as follows (please refer to section 10 for details on each survey method, frequency and dates of surveys and other relevant information):

Avifauna

- Unlimited-distance Point Count method
- Transect Search method
- Time-constrained Search method
- NYSDEC marsh bird survey (if available habitat is present) protocol

Herpetofauna

- Anuran Calling Survey
- Transect Search method
- Time-constrained Search method
- Random Opportunistic Search method

Mammals

- Active Acoustic Monitoring for Bats
- Transect Search method (including road transects)
- Time-constrained Search method
- Sherman Live Trapping Arrays
- Random Opportunistic Search method

7.1 Project Management

AES will develop regular progress status reports (every 2 months, totaling approximately 6 progress reports) to be submitted to the distribution list recipients (USEPA, BNR, AES & CC) throughout the project timeline. AES and CC will oversee the development of a final scientific report for this project.

7.2 Project Schedule

This timetable (Figure 3) reflects key seasonal windows for the varying wildlife survey components, where surveys will be executed under suitable weather conditions within the respective windows. As weather forecasts will dictate, exact survey dates will be adjusted to best adhere to the displayed schedule.

Project Timeline

Aug-11 | Sep-11 | Oct-11 | Nov-11 | Dec-11 | Jan-12 | Feb-12 | Mar-12 | Apr-12 | May-12 | Jun-12 | Jul-12 | Aug-12 | Sep-12 | Oct-12 | Nov-12 | Dec-12

Task #	Task Description
	TASK 1 - QAPP PROCESS
1.1	Develop DRAFT Quality Assurance Project Plan (QAPP)
1.2	Review and Comments Period for QAPP by USEPA
1.3	Edits and Submission of FINAL QAPP
1.4	Final QAPP ReviewPeriod/Approval
	TASK 2 - FAUNAL SURVEYS
2.1	Site Reconnaissance
2.2	Avifauna - Point-Count Breeding Bird Survey
2.3	Avifauna - Migratory Passerine Survey
2.4	Avifauna - Migratory Waterfowl/Shorebird Survey
2.5	Avifauna - Wintering Bird Survey
2.6	Herpetofauna - Anuran Calling Survey
2.7	Herpetofauna - Time (and Area) Constrained Survey
2.8	Herpetofauna - Random Opportunistic Survey
2.9	Active Acoustic Monitoring for Bats
2.10	Mammals - Sherman Trapping for Small Mammals
2.11	Mammals - Transect Searches and Diagnostic
	TASK 3 - PROJECT MANAGEMENT
3.1	Data Entry
3.2	Bi-monthly Progress Report Submissions
3.3	Data Review QA/QC
3.4	Final Report Generation
3.5	Draft Report Submission for Review
3.6	Review and Comments Period
3.6	Final Report Submission

Figure 3. Project Timeline and Survey Schedule Matrix

8.0 Quality Objectives and Criteria for Measurement Data

Data Quality Objectives (DQOs) are quantitative and qualitative statements that clarify the intended use of data and specify the quality of data needed to support a decision. Data of known and documented quality are essential components for the success of the project, as these data will be used to support the decision-making process for future habitat restoration and human use along the LBR.

The primary data quality objective is to generate as complete a record as possible of the confirmed extant populations of avifauna, herpetofauna, and mammals within the within the constraints of the project budget and schedule. This is necessary to inform the rest of the tasks outlined in the section above. Information collected under this step will be screened according to the QA objectives outlined in this section.

The following summarizes the data quality objectives for this project.

8.1 Data precision. Usually, precision is the measure of agreement among repeated measurements of the same property under identical, or comparable, conditions; calculated as either the range or as the standard deviation. As with comparability, AES will exercise well defined survey methods at defined sample locations to minimize random error. Temporal, seasonal, and climatic variable repetition will be strongly suggested within the final report deliverable for all replications of this survey effort as well. To this extent, all climatic and temporal variables will be documented on original data sheets for every survey effort and be provided within the final report deliverable.

8.1.1 Accuracy. Statistically, accuracy is a measure of the overall agreement of a measurement to a known value. It includes a combination of random error (precision) and systematic error (bias) components of both sampling and analytical operations. Our "accuracy" goal is to ensure that information generated and collected is as accurate as possible within project constraints. To meet this goal, AES will document all QA/QC measures conducted when the initial field observations are documented. All information collected within this project will be of an observational nature using standardized observation methods, including well known techniques to minimize systematic error (surveyor bias and surveyor fatigue). Both herpetofaunal and mammalian survey methods may result in temporarily captured individuals, but no physical specimens will be removed from the site.

The accuracy of survey site (location) replication will be guaranteed by geo-referencing and map generation as well as survey markers posted at each location.

8.2 Bias. Bias is the systematic or persistent distortion of a measurement process that causes errors in one direction. When conducting observation-based surveys this is a critical component to consider. As a well documented means to minimize systematic error in wildlife biology data collection, an established protocol is provided for equipment used/employed to minimized surveyor bias. Additional considerations are derived from existing literature on minimizing observer bias in wildlife surveys (Bart et al. 2004).

8.3 Representativeness. Representativeness is a qualitative term that expresses the degree to which data accurately and precisely represents a characteristic of a population, parameter variations at a sampling point, a process condition, or an environmental condition. For this study this pertains to both the available wildlife habitat within the AOC and the combination of methods selected to gather data. Due to various spatial and temporal constraints (property access, safety concerns, budget, timeline, or otherwise), representative locations are determined within the AOC for this survey effort with best efforts to achieve n=N. Specific to this project, some locations have been predetermined due to existing habitat enhancement, restoration, and previous studies. AES and CC will use the most complete and accurate information available to select representative sample point locations within the LBR AOC, including the ERMP, LBR RAP, FSBR, and direct recommendations and requests from both BNR and USEPA. In addition, a site reconnaissance effort will be conducted prior to any survey efforts to verify satisfactory habitat representativeness. Rarely in population biology and wildlife biology do possibilities exist to study a population in its entirety. To this extent, a sample population (n) will be observed within the total population (N) with best efforts to achieve n/N = 1.

8.4 Comparability. Comparability is a qualitative term that expresses the measure of confidence that one data set can be compared to another and can be combined for the decision(s) to be made. AES will be setting the standard for wildlife population data collection within the AOC moving forward. All survey methods are well documented within current, peer-reviewed scientific literature and are repeatable. Survey locations will be considered permanent or a close to permanent as possible for indefinite data comparison moving forward. AES will also review previous bird surveys conducted by NYDEC and BOS to include as much of this historical survey data as possible within statistical comparisons. However, the current survey effort is to be considered baseline data for comparison moving forward.

8.5 Completeness. Statistically, completeness is a measure of the amount of valid data needed to be obtained from a measurement system. Because the bulk of this project is conducting field surveys, completeness of each task will be merited by the amount of survey hours completed within suitable seasons for target fauna. With the understanding of inherent variability within a landscape as well as the probabilities of occurrence for the varying animal groups, executing survey protocols detailed within Sections 10.1 and 10.2 will generate a valid amount of data to satisfy this definition of completeness.

8.6 Sensitivity. For this project, sensitivity is assumed to relate to the minimum level of detectability for species confirmation. For herpetofauna and small mammals, observations are likely to involve captured individuals which may be examined closely for diagnostic morphological characteristics and be photographed. For avifauna, many observations may be quite brief (visually and/or audibly) or less than ideal for diagnostic confirmation in other forms (poor lighting, distance, noise pollution/disturbance, etc.). For these observations, the minimum level of detectability will be 100% confirmation. Any observations which are not 100% confirmed will be documented, but not valid within the analytical process.

8.7 Logical consistency. The logical consistency of data (including geographic feature attributes) will be checked during data processing. For example, AES will verify that identified suitable locations for surveys associated with potentially suitable habitats. Additionally, reviews of collected data will check for species/season/habitat coordination and question/investigate observations inconsistent with historical and life history data for the region and species. Logical consistency checks will be used to assure that the data quality objectives are achieved. For avifaunal observational data, logical consistency checks also include verifying and reviewing all songs, calls, and chip notes of passerine suspected to be potentially present within the AOC to maintain this data as consistently 'fresh' within the minds of observers. For migratory and wintering seasons, basic plumage molt reviews will be important. Logistical consistency checks for herpetofauna will be most closely tied to literature and reference review as well, ensuring that search efforts are best put forth at optimal times and conditions for species potentially present within the AOC. Fortification of species-specific search images will be exercised as well. For mammals, regularly measuring observed tracks and retaining found hair and scat samples for cross-referencing will be valuable in providing logical consistency in the data.

8.8 Measures to Ensure Quality Data. AES will maintain an Excel Spreadsheet database for cumulative data input and overall data flow tracking, including QAQC steps throughout the project timeline. All data will be transferred from original datasheets into a cumulative master spreadsheet no later than 14 days from the date of collection. AES will internally QA/QC all data entry and compare with original data sheets on a bi-monthly basis to ensure all data is properly and accurately transferred from the field and the observer(s) to the statistical database and, subsequently the final report and associated statistical analyses. Both the AES Project Manager and Quality Control Officer will conduct these internal audits. All QC steps including senior staff review of all data will be tracked in the spreadsheet.

9.0 Non-direct Measurements (Secondary Data)

All peer-reviewed articles which support survey methodology for this project will be archived within a digital storage file located on the AES server for referencing. Project filing, document naming/indexing and folder structures will utilize AES' standard operating procedures.

All secondary data obtained from other sources will be critically reviewed and applied to this project appropriately. Currently, there are no surveys conducted for the target animal groups within the AOC designed to document extant fauna with the expressed intention of providing comparative data correlative to enhancement, restoration, and remediation efforts proposed within the AOC. Avifaunal assessments of the Lower Buffalo River/AOC and tributary streams (outside AOC/reference location) have been conducted previously (NYSDEC, 1993; BOS/Canisius College, 2005-06). Methods and sample locations varied between these studies. This variation limits the direct statistical value of these data sets. However, anecdotal information may support general population trends and total species richness lists may be compared on an anecdotal basis. AES will obtain copies of any reports/data summaries (secondary data) associated with these survey efforts for potential comparative value upon completion of Phase II. These reports will provide direct value when determining survey point locations and best efforts to overlap surveyed areas will be made to increase the probability of comparability with data collected from this project. Herpetofaunal and mammal studies were conducted informally and/or on an anecdotal basis and seem currently under-represented. If other applicable data or studies become available throughout the life of this project AES will evaluate these and integrate them into the study as appropriate.

10.0 – Field Monitoring Requirements

10.1 Sampling Process Design

This project has been designed to document the current species richness and abundance of three main faunal assemblages; the herpetofauna, the avifauna, and the mammals inhabiting the LBR AOC. Within these general assemblages are target species (15 herpetofauna, 61 bird, and 3 mammal species) whose conservation status is currently of greatest need within the region (BNR, personal communications; New York Wildlife Action Plan, NYSDEC). We have selected a total of 9 scientifically valid survey methods (described below) to achieve this goal. Understanding both the physical scope of this project as well as its role within larger goals associated with the Buffalo River RAP, the survey design takes a nearly comprehensive approach[2].

Faunal Assemblage	Survey Method	Targets within Faunal Assemblage	Data Type	Relevant Citations
Avifauna	Unlimited-Distance Point Count Method	Breeding Passerine Population	Species Richness and Relative Abundance	Dawkins 1981, Verner 1985
	Unlimited-Distance Point Count Method	Migratory Passerine Population	Species Richness and Relative Abundance	Hutto et al. 1986
	Unlimited-Distance Point Count Method	Wintering Bird Population	Species Richness and Relative Abundance	Gutwiller 1981
	Transect, Opportunistic and Meander Searches	Migratory Passerine, Migratory Shorebirds, Migratory Waterfowl, Migratory Raptors	Species Richness and Relative Abundance	Tiebout III 2005
Herpetofauna	Anuran Calling Survey	Breeding Frog and Toad Population	Species Richness	Mossman et al. 1998, Bridges and Dorcas 2000, Weir 2001, Crouch III and Paton 2002, Weir and Mossman 2005
	Transect, Time and Area-Constrained, and Random Opportunistic Searches	Snake, Turtle, Salamander, Frog, and Toad Population	Species Richness and Relative Abundance	Ford and Burghardt 1993, Hayek and Buzas 1997, Webb and Shine 1998, Tiebout III 2005
Mammal	Active Acoustic Bat Monitoring	Foraging and Migrating Bat Species	Species Richness and Relative Abundance	O'Farrell and Gannon 1999
	Sherman Live Trapping	Small Terrestrial Mammals	Species Richness	Maly and Cranford 1985, Slade et al. 1993
	Transect, Time and Area-Constrained, and Random Opportunistic Searches	All Mammal Species (exluding all bat species but Eastern Red Bat)	Species Richness	

Figure 4. Survey Methods Summary

[2] In order to remain within the budget and provide the best and most appropriate data for the project goals, the following efforts will be under-represented within the design and, thus, prevent it from being wholly comprehensive. Diurnal raptor migration has comparatively less influence or significance to the proposed efforts and target outcomes of the survey effort as related to the Buffalo River RAP and will only be observed opportunistically during other survey events within migration periods. Trapping efforts for herpetofaunal investigations are costly relative to proposed search methods (which have recently proven as significantly more time and cost effective by Tiebout III 2005). Lastly, fully aquatic river-dwelling amphibians (neotenic larval life stages and adult common mudpuppy) will not be targeted within the survey effort.

Due to the integrated nature of this effort, AES will work with USEPA and BNR to determine the best representation of sampling sites throughout the AOC. Currently, AES is aware of 5 locations which will be sampled due to their direct relation to Great Lakes Legacy Act Projects (Head of City Ship Canal, Katherine Street Peninsula, and Ohio Street) and current habitat restoration efforts (Seneca Bluffs and River Bend).

In a proactive effort, AES has reviewed proposed restoration initiatives within both the ERMP and the FSBR and pre-propose a total of 23 avifaunal sampling locations (Figures 5, 6 and 7). Upon the completion of Phase I, at least 6 area-constrained survey/transect locations will be identified and mapped for herpetofauna and mammal search efforts (Figure 8).

Locations Within the AOC

Sample Location #	Name of Area	Habitat Type
1	Smith Street Park	Upland Forest
2	Smith Street Park	Forest/Pond
3	Ohio Street Park	Urban/Developed
4	Ohio Street Park	Woodlot
5	Concrete Central (east)	Fallow Field
6	Concrete Central (east)	Fallow Field/Open River (east side)
7	Concrete Central (west)	Fallow Field
8	Concrete Central (west)	Fallow Field/Open River (west side)
9	Katherine Street Peninsula	Riparian Forest
10	Katherine Street Peninsula	Emergent Wetland
11	Katherine Street Peninsula	Emergent Wetland/Riparian Forest
12	Katherine Street Peninsula	Emergent Wetland/Open River
13	Steelfields	Fallow Field
14	Steelfields	Fallow Field/Open River
15	Steelfields	Fallow Field/Forest Edge
16	Steelfields	Upland Forest
17	Bailey Woods	Upland Forest
18	Bailey Woods	Riparian Forest/Open River
19	Bailey Peninsula	Riparian Forest
20	Bailey Peninsula	Riaprian Forest/ Open River
21	Dead Man's Creek	Urban Stream/River Confluence
22	Head of City Ship Canal	Urban/Developed
23	b/w Bell & NFTA Slip	Dune/Open Water

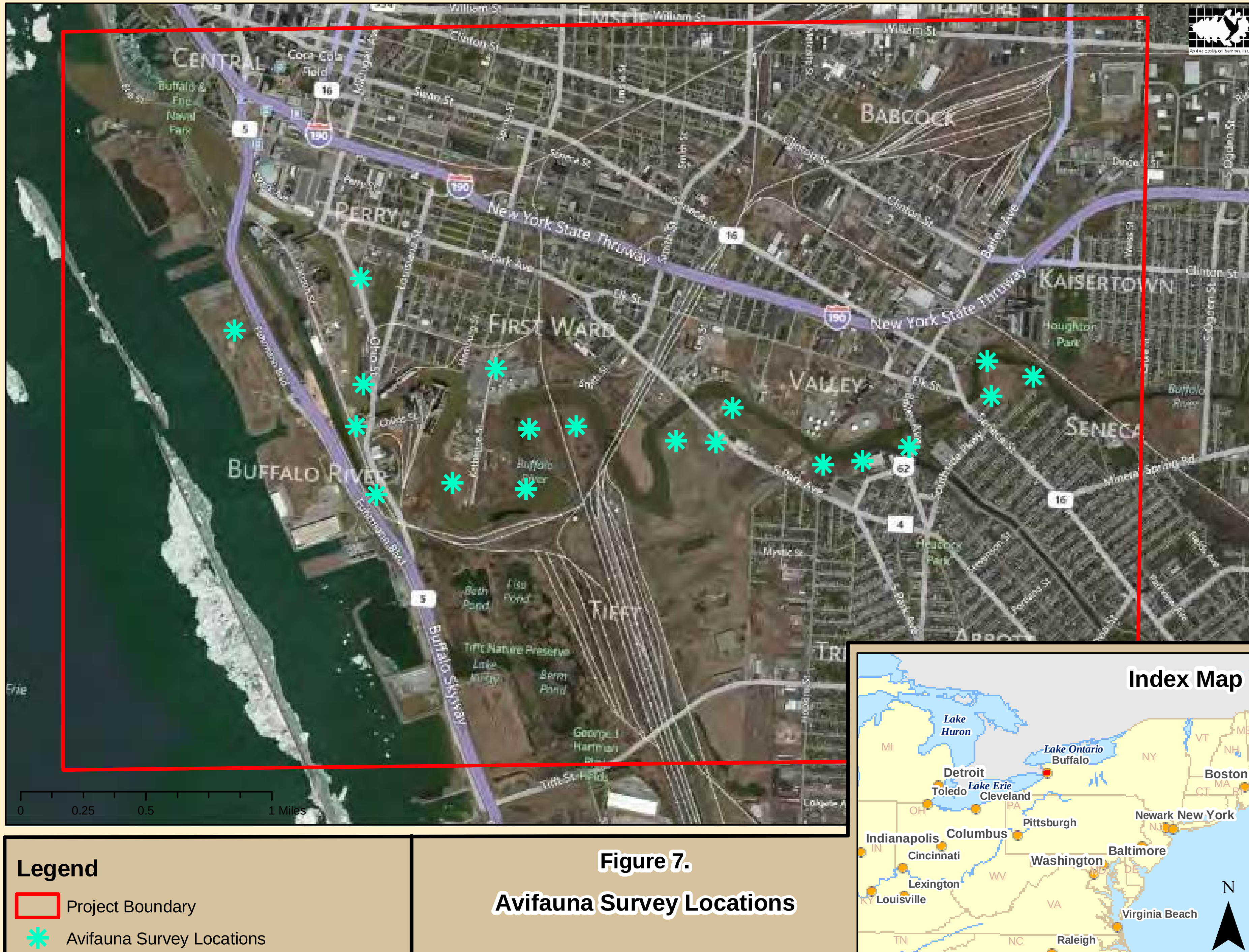
Figure 5. Proposed Avifaunal Survey Point Locations within the AOC

Locations Outside of AOC

Sample Location #	Name of Area	Habitat Type
1	Seneca Bluffs	Riparian Forest/Open River
2	Seneca Bluffs	Riparian Forest
3	Seneca Bluffs	Upland Forest
4	Seneca Bluffs	Field/Meadow
5	Seneca Bluffs	Floodplain Wetland
6	River Bend	Riparian Forest/Open River
7	River Bend	Riparian Forest
8	River Bend	Upland Forest
9	River Bend	Field/Meadow
10	River Bend	Floodplain Wetland

Figure 6. Proposed Avifaunal Survey Point Locations Outside of the AOC

True reference locations for this project will be difficult to sample, mainly due to distance, budget, and paucity of actual ‘reference’ locations (remnant, healthy, native riverine ecosystems within the region which emulate the historically present ecosystem which the associated efforts strive to restore). For these reasons, AES will sample existing locations relevant to the restoration and enhancement of the Buffalo River ecosystem located outside of the AOC. One location was selected (Seneca Bluffs) to conduct the same survey methods and effort. While this location is not a true ‘reference’ location, it represents a comparatively more natural/wild habitat patch along a tributary stream to the LBR, providing some level of comparative habitat use.



Legend

Project Boundary

Avifauna Survey Locations

Figure 7.

Avifauna Survey Locations

Figure 8.

Proposed Areas for Area-Constrained Surveys and Transects

10.2 Sampling Methods

AVIFAUNA

Breeding Passerine Point Count Surveys - An unlimited-distance point count method (Dawkins 1981, Verner 1985) will be used at pre-established, fixed locations throughout the survey area and reference natural area. Efforts to best allocate this effort will be guided by formulas and methods described in Barker et al. (1993). Count duration will be 10 minutes at each site. Data will be grouped into 0-3 minute, 3-5 minutes, and 5-10 minute intervals (standard count duration periods) to increase comparability potential of the collected with varying historic and future data sets. Abundance within each sample location is not counted beyond 10 minutes to minimize double-count probability and standard error (Smith et al. 1998, Verner 1988). All breeding bird points will visited 3 times during the breeding season, spaced at least seven days apart. GPS, detailed base maps and location stakes will all be used to ensure consistent and accurate relocation of sample sites throughout the year. Adequate navigation tools will also ensure the necessary efficiency and stealth needed when moving into and between sampling position. In case of GPS equipment failure (tree canopy, poor satellite configuration, etc) base maps will be detailed enough to allow field staff to easily navigate into position.

Migratory Bird Surveys (passerine) – One avifaunal biologist (single-observer method) will conduct site visits to search for birds at all sample locations during peak migration times for various bird groups (see schedule/life history matrix). At least 3 spring and 5 fall surveys will be conducted. To minimize variation in detection probability, best efforts will be made to use the same observer throughout the study. Similar to breeding bird surveys, all other avifaunal survey periods will follow general unlimited-distance point count survey methods. Unlike the breeding bird surveys, if species richness continues to increase beyond 10 minutes during migratory bird surveys, sampling duration will be extended until a 3 minute period passes with no additional new species observed. If the observer reaches twenty minutes at one point, he/she will move on the next point to maintain a standardized level of accuracy and precision in estimations as well as successfully survey all points within the allotted time frame.

Migratory Bird Transect Searches - In addition to fixed-location point counts, migratory bird surveys will be supplemented with area search methods as well, including multiple-observer area searches and transect routes along the LBR shorelines and through forest and field habitats. These methods will involve actively searching for bird presence by sight (naked eye, roof prism 10x binoculars, and/or 60X spotting telescope) and sound. In addition to visual and audible observations of living birds, diagnostic evidence of bird presence, such as nests, feathers, carcasses, cough pellets, or otherwise will be documented. Any rare, threatened or endangered species observed will be thoroughly documented. Best efforts to further document rare species will be done by photo and/or digital audio recordings when possible.

For river (waterfowl and shorebird) and opportunistic migrant raptor searches, a Kowa TSSN 880 Series, 60X high powered spotting telescope and tripod will be used in addition to binoculars. Observations will consist of confirmed visual and/or audible accounts of species detected. Relative abundance will be noted as accurately as possible for all species observed. In the case of large flocks, rafts, or kettles of birds, relevant methods within Ralph and Scott (2003) will be applied for abundance estimate counting methods.

Migratory bird survey start time and duration will vary with season, current weather, and species targets (passerine versus raptors versus waterfowl, etc.). Typically, passerine migration surveys will consist of morning (6AM-11AM) and (occasionally) late afternoon/early evening (430PM – 630PM) survey efforts. Shorebird surveys will be conducted in the morning and late afternoon as well. Opportunistic diurnal raptor searches will only be conducted when weather conditions are conducive to migration and birds are being observed. For spring, N and NW winds are preferred as well as clear to partly cloudy skies. For fall the winds are best from any southern derivation, but E and SE winds will likely prove valuable for onsite observations as migrants are pushed to the diversion line/shores of Lake Erie (early observations will determine what conditions are best for the site and will then be exploited for the remainder of the survey effort). Similar conditions to those stated above for diurnal raptor migration will be preferred during the evenings prior to passerine and other nocturnal migrant species surveys.

Wintering Bird Surveys – Unlimited distance point counts will be completed sampled for wintering bird species. Accuracy and precision of species richness estimates increases with observation duration (Gutzwiller 1981), so these points will be surveyed for twenty minutes (versus the 10 minute breeding passerine survey). Survey times will be extended to dawn to dusk for these surveys to maintain sample size/statistical power.

Optional/Additional Survey/ NYSDEC Breeding Marsh Bird Protocol – Should one or more suitably-sized marsh ecosystems (combination of emergent vegetation, submergent vegetation, and open water) be present within the AOC or Seneca Bluffs site, AES will perform at least one breeding marsh bird survey following the NYSDEC protocol (detailed on data sheet provided in Section 12.0). In brief, this method involves broadcasting potentially present marsh bird species calls (from the NYSDEC breeding marsh bird protocol CD) in timed-intervals accompanied by timed pauses for listening. If the habitat is not present, this survey method will not be implemented.

The varying survey methods and sample locations are capable of determining presence/absence of all 61 target bird species/species of greatest conservation need (provided by BNR), but is designed as a comprehensive approach and, therefore, no species/observations will be omitted from the survey effort.

HERPETOFAUNA

Due to their cryptic nature and ability to remain concealed and/or motionless for extended periods of time, reptiles and some amphibians are often difficult to sample. In fact, detection probabilities are often needed to validate representative population sampling. AES will rely on our trained and experienced herpetologist to conduct the most effective and valuable survey methods to gather presence-absence data (species richness and abundance). Due to bi-modal activity behavior exhibited in most reptile and amphibian species, surveys will be conducted within the spring-early summer (when animals emerge and egress from hibernacula, breed, and re-locate to foraging habitat), and the fall (when neonate snakes, turtles, and numerous recently metamorphed amphibian species are emerging from nesting sites/breeding pools and most ectotherms are relocating to suitable hibernacula locations). The varying survey methods and sample locations are designed to determine presence/absence of 14 out of 15 target herpetofaunal[3] species/species of greatest conservation need (provided by BNR), but is not limited to documenting these species.

Anuran Calling Survey - Calling amphibian surveys will be conducted at each pre-determined sampling location. When possible, reference locations will be visited before or simultaneously to survey efforts onsite to validate presence/absence. Dates will be selected based upon northwestern New York breeding amphibian phenology and climatic and weather conditions (see Figure 3 for selected survey weeks). A minimum of 4 surveys will be conducted at least two weeks apart. Opportunistically observed concentrations of breeding amphibians will be noted, surveyed, and georeferenced as well. This is an extremely valuable, non-intrusive, and cost-effective means of determining critical habitat, species diversity/richness, and loosely defined relative abundance estimates. Protocol will follow nationally implemented methodology to provide maximum comparability to other and future data sets (Weir and Mossman, 2005).

Time- and Area-Constrained Surveys - AES herpetologists will target peak activity seasons and times of day to traverse pre-established linear transects throughout the AOC. After a rapid reconnaissance, transect routes will be strategically selected to intersect, parallel, and/or expose key potential habitat, including basking structures, nesting mounds, surface cover (refuse piles and coarse woody debris), foraging habitat, and overwintering habitat. A minimum of nine visits will be made throughout the study timeline, targeting key activity periods and optimal climatic conditions within these periods. Selected reference community locations will be surveyed in a similar fashion. This method has been recently considered not only the most cost efficient, but the most effective method for determining comprehensive herpetofaunal presence/absence at a location (Tiebout III, 2005).

Random Opportunistic Searches - This scientifically valid survey method is not limited by temporal or spatial constraints and is largely dependent upon the discretion of the observer. The observer may exploit unforeseen encounters with optimal basking locations, potential nesting grounds, surface concealment cover, or other structural habitat attractive to snakes, turtles, or amphibians while conducting other activities onsite. Only skilled herpetologists find true value in this, as a keen sense for subtle changes in climatic conditions and the ability to recognize optimal conditions during certain seasons and times of day are often a catalyst for this method to be successful.

[3] The common mudpuppy (*Necturus maculosus*) is a fully aquatic salamander species which inhabits large rivers and streams. A competent survey effort for this species would involve searching the Lower Buffalo River bed substrate and, therefore, cannot be represented within the survey design. No aquatic trapping or submerged search efforts/dives will be conducted during this survey.

MAMMALS

The City of Buffalo is deeply connected to both a major river system and the Great Lake Erie. These water resources are both known to support a variety of large, medium, and small-sized mammals. With varying land use history and a clash of human and natural systems, there is potential to find everything from river otter and mink to Norway rat and short-tailed shrew along the banks of the Buffalo River. The varying survey methods and sample locations are designed to determine presence/absence of the 3 target mammal species/species of greatest conservation need (provided by BNR), but is not limited to documenting these species.

Bat Habitat Assessment and Active Acoustic Monitoring for Bats (Transects and/or Time-Constrained Searches) – An assessment will be completed of the site and its potential to provide favorable habitat for commuting and foraging bats. Bats of the region will be researched and species habitat preferences will be used to identify features in the project location which are known to be used by different species of bats. The results will be used to identify active acoustic monitoring transect routes within the project location which incorporate representative areas likely to be used by bats as well as areas considered less favorable. Surveying these routes involves walking or driving pre-determined transects along a trail or road (or walking through target habitat locations) with a bat detector recording all bat calls. Active monitoring provides information on bat distribution and habitat use, as well as abundance and potentially population trends (depending on how many nights are recorded). Acoustic monitoring will be conducted in locations determined as potential foraging locations (following the Phase I site recon and bat habitat assessment efforts) during the late spring/early summer and fall migration periods when both resident and migrant bats may be observed.

Sherman Live Trapping Arrays – The AES/CC Team will use the scientifically valid and humane Sherman Trapping methods for small mammals. After site reconnaissance, trap arrays/clusters will be established. Trapping events will be in selected locations (approximately 6) and continue for three consecutive nights. All trap locations will be geo-referenced. Trapping events will occur three separate times, spaced at least 30 days apart, at each mammal trapping location.

At each established location, 15 Sherman live traps will be baited with a dollop of peanut butter and placed in a clustered array. These traps are prefabricated metal hinged boxes (2.5" x 2.5" x 8") with a pressure sensitive trap door. These traps will then be checked the following morning and every 24 hours thereafter. Observers will use forceps and industrial gloves to remove captured animals. A clear plastic container will be used to temporarily retain captured individuals for proper identification. All captured individuals will be released at the capture location. On the first and second mornings, the traps will then be re-baited and returned to the capture location. On the third morning, traps will be collected, cleaned/disinfected, and stored for future use.

Time-Constrained Searches – As we familiarize ourselves with the AOC we will identify key track and scat corridor locations and then use them as search transects. In addition, we will scan and search for critical habitat and other evidence of mammal presence, such as middens, burrows (and other created shelters), and roadside carcasses. A suite of high-powered optics will be on our person while conducting surveys, including a 60X Kowa Optimed TSN 880 – Series High Powered Spotting Telescope and Manfrotto/Bogen Tripod. While this will be used for scanning for basking turtles within the river, it will prove quite valuable for observing distant mammal behavior (including, potentially, river otter) and difficult access locations where mammal activity may be present.

Transect Searches – Following a site reconnaissance/survey location ground-truthing exercise, Approximately 6 transects will be established within the AOC (2 driving, 4 walking). Methods for searching transects are the following:

> *Road-cruising* - Drive slowly with hazards on scanning the road sides for dead-on-road (DOR) and alive-on-road (AOR) animals. When target animals are encountered an observer will exit the vehicle and examine the remains or remove the animal from immediate harm's way. All observers will wear a reflective vest at all times during road-cruising surveys. Difficult identifications will be photographed and/or collected for later identification.
>
> *Walking Transects* – At least one observer will slowly walk each transect while consistently searching for target animals. Searches will include use of binoculars, spotting telescopes, and physically searching the immediate area, including flipping rocks/debris and walking through grassy areas to flush animals. Observed animals will be documented by time and location along transect. Photographs will be taken if possible.

10.3 Field Quality Control (QC)

In order to maintain consistent survey methods and generate the desired statistical power in the data collection, AES will maintain the following QC protocols;

- Geo-reference AND landmark each survey location point for exact point replication
- Generate adequate and detailed base maps for relocation of survey locations if GPS malfunctions.
- Orient observer alignment via compass readings prior to each sampling
- Familiarize and calibration of all field staff and teams to data forms, methods, equipment and QC procedures prior to field deployment
- Carry a clipboard containing survey methods and instructional aids, such as
    - AOU alpha codes for North American bird species
    - Beaufort Wind Scale Codes
    - Amphibian Calling Intensity Codes
    - Habitat Classification Codes
    - Listed Methods for Point Count Survey Execution (see 10.3.1)

As a project dependent upon strictly judgmental data, there is likely to be observations which cannot be confirmed to the species level. In these circumstances, AES and CC observers will make field note observation details to support the observation. These sorts of observations will be then later analyzed to determine the level of certainty to which they can be presented within the data. For example, a relatively medium-sized raptor observed in poor lighting on a windy day at ~1000ft elevation on set wings with a relatively prominent head projection, long tail, and rounded wings would likely be classified as an unknown Accipiter (UNAC) and supporting observations will be supplied. Any observations which are not 100% certain will be presented in this manner and, therefore, the data will err on the side of conservative to remain reliable.

10.3.1 Point-Count Method for Data Collection (for QC)

Time of Day Limitations

Spring passerine migration: Dawn to 11am or until a noticeable drop in bird activity; and 5pm to dusk

Breeding bird survey: Dawn to 10am or until a noticeable drop in bird activity; if activity remains high at 10am, continue until 11am or a noticeable drop in bird activity.

Fall passerine migration: Dawn to dusk.

Weather Constraints

Surveys should be conducted during weather that promotes bird activity.

a. Steady rain, poor visibility or steady strong winds (steady wind over 25mph) are not acceptable. Brief periods of rain, light drizzle and gusts up to 30mph are acceptable if birds remain active.

Point Count Procedure

1. When approaching a sampling point, assess whether a single AES land-cover type covers >50% of the plot. If there is no dominant habitat, move the point location into the intended dominant type for that point.
2. Arrive at point and wait 5 to10 minutes for birds to habituate to the surveyor's presence.
3. While waiting, begin filling in the general point and weather information on the data sheet.
4. If visiting a point for the first time, take a GPS reading. For all GPS readings at sampling points in a project site, use a four letter code made of the first initials of key words (e.g., Big Muddy = BIMU) followed by a unique number for each sampling point. Number sampling points consecutively beginning at 100. On subsequent visits, do not take a GPS reading as it severely complicates data management. Write the coordinates on the data sheet and indicate the location of the point on your field map if it differs from the proposed point on the field map. Write down the nearest street location or other unique location identifier for the point.
5. On the first visit to a point identify the dominant and other significant AES habitat cover types at the site. For each, visually estimate the percent of the habitat within a 100m radius of the point, or within the observable radius if less than 100m.
   a. The dominant habitat has >50% cover in the 100m radius area.
   b. Other significant habitats will cover >10% of the 100m radius area.
6. On the first visit to a point sketch and label the habitat cover type in the circle on the data sheet. Note the dimensions of the habitat, including distances from the sampling point. Note significant features in the 100m radius area, such as roads, hedgerows, houses, ditches with grass cover, etc.

a. In the notes section add details on type of crop, percent tree cover, maturity of forest, etc.

Habitat Cover Type	Description
Developed	Residential, commercial, industrial, and other developed land, including developed green space (e.g., golf-course, city park).
Cropland	Regularly cultivated land. Pasture, haymeadow, and fallow field are grasslands.
Barren Land	Land with sparse to no vegetation (e.g., mines, landfills, construction sites, sparsely vegetated shores).
Grassland	Grass and herbaceous plants cover ≥90% of the ground in uplands.
Upland Shrub-Scrub	Shrubs and scrubby or mature trees cover 10-50% of the ground. Includes brushland and savanna with trees and shrubs.
Upland Broadleaf Forest	Trees cover cover ≥50% of the ground. Broadleaf deciduous trees are ≥90% of the tree cover.
Upland Coniferous Forest	Trees cover ≥50% of the ground. Coniferous (needle-leaved) trees are ≥90% of the tree cover.
Upland Mixed Forest	Trees cover ≥50% of the ground. A mixture of broadleaf and coniferous trees, with each covering <90% of the forest.
Forested Wetland	A wetland or lowland flooded area with 50-100% tree cover.
Shrub-Scrub Wetland	A wetland with 10-50% cover by shrubs, scrubby and mature trees. Includes savanna with trees and shrubs.
Emergent Wetland	A wetland with ≥90% cover of herbaceous plants.
Open Water	Water and sparse to no vegetation cover; rivers, streams, lakes, ponds.

7. For passerine surveys, record all birds seen and heard at the point in 10 minutes for an unlimited distance from the point. Record data in the appropriate time increment. Record each species observation separately and note the number of individuals of a species for each observation.
8. Use the AOU 4-digit alpha codes for species. A master alpha code list is available from AES.
9. For other data, use the codes provided on the data sheet.
10. For flight height, indicate units used (m or ft). Meters are preferred.
11. The notes column in the bird data section is for noting the identifying features of a bird for later identification or for clarification or explanation of data.
12. During the breeding season, some states require that a breeding confirmation level be recorded for each species observed. Use the local breeding confirmation level guidelines.

11.0 Analytical Requirements

11.1 Analytical Methods

In the field, the data collected will be judgmental in nature and will not require any specialized analytical equipment. Analysis for this project is assumed to be defined as the process of analyzing the raw data collected and how it is interpreted

At the end of each month, AES will perform data processing. Data processing involves downloading and cataloging any geo-referenced data, reviewing all observational notes for clarifications and converting all hand-written data into the digital data storage spreadsheets. After data is digitally entered information will be reviewed by the staff member who collected the data in the field and data flow/progress will be indexed into a master spreadsheet. (See table in Section 12.0). This will include QA/QC of all collected data. Upon the completion of Phase II, total data sets will be analyzed to generate graphs and relevant comparisons, such as foraging guild percentages, spatial concentrations of individuals, habitat/species correlations, and other. Since the results of this survey are essentially the baseline for future replications, the data itself will largely be stand alone and will serve to provide further analytical capabilities as comparable data sets are collected over time. Estimations on populations and a species richness list will be provided for the entire AOC as well as at individual sample locations.

The AES Project Manager will be providing continuous monitoring of project activities and will provide guidance to project staff on the resolution of technical issues. If the issue is significant and corrective action is required, the AES Project Manager will document the issue and inform the AES QA Manager and work with them to address the issue.

11.2 Quality Control

AES will follow set quality control procedures when collecting judgmental data. The best methods are established observer bias minimization practices and adherence to established season, climatic, and temporal recommendations for performing the various survey methods.

Furthermore, our data will be compared to existing and concurrent data sets that may be available (BOS study 1993, www.birdingonthe.net daily postings for the area/region, and undocumented reports that may be available via USEPA or BNR) to further validate population estimates, significant corridors, or otherwise.

Geo-referenced sample locations will be accurate to 2M and will also be marked at the site (via flagging or staking). Original data sheets will provide sketches of each location to assist in replicate sample efforts in the future

12.0 Data Collection, Handling and Custody Requirements

Data collection and data flow are maintained by the AES Project Manager. The data sheets (Figures 10, 11, 12, 13 & 14) are used to document all collected field data. In addition, project staff will maintain a Data Flow Tracker spreadsheet that will track critical data handling efforts including QAQC and data archival steps (see example below).

Data Flow Tracker												
Field Form Inventory					Data Processing/QAQC/Data Archival						Data Archival	
Site	SiteName	FieldForm	FieldDate	FieldStaff	ScanDate	ScanStaff	DateEntered	DataEntryStaff	FieldStaffReviewDate	FieldStaffReview	FieldFormLocation	DocName
1	Seneca Bluffs	Avifaunal	Nov 15 2011	JLC	Dec 10 2011	JJR	Dec 15 2011	JJR	JLC	Dec 20 2011	G:\Documents\11-0543 Buffalo River Wildlife Surveys\Field Forms	AVI01_jlc_2011nov15
2	Seneca Bluffs	Avifaunal	Nov 15 2012	JLC	Dec 10 2012	JJR	Dec 15 2012					
3	Seneca Bluffs	Avifaunal	Nov 15 2013	JLC	Dec 10 2013	JJR	Dec 15 2013					

Figure 9. Example Data Flow Tracker to be used for QA/QC in Data Collection, Handling, and Custody

Upon completion of each survey event field forms will be scanned and saved electronically on the secure internal server network. Once data are securely stored, archived and viewed from the internal server system, original hard copy field forms will be stored at the AES office located in Conshohocken, PA until completion of the project, at which time they may be mailed to the USEPA or BNR for permanent storage (at which time photocopies/printed scans of the originals will be filed at the AES office).

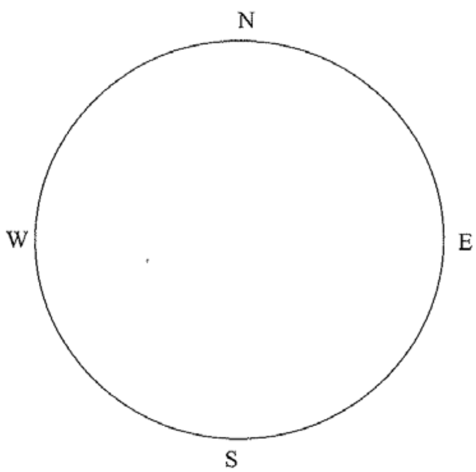
PASSERINE - Bird Point Count Data Sheet

Project Name ______________________ Sample Point ID # & Name ______________________

Date ________ Start Time ________ Stop Time ________ X coordinate, Y coordinate ______________________

Observer ______ Wind Spd. ______ Wind Dir. ______ Sky ______ Temp ______ Dominant (>50%) AES Habitat Type ______________________

Other Habitats______________________



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes

New York Marsh Bird Monitoring Survey Data Sheet

Pg___ of ___

		Before	After
Date (e.g. 14-May-09):	**Temperature** (°F):		
Hexagon #:	**Wind speed** (see below):		
Observer:	**Cloud cover** (%):		
Survey replication #:	**Precipitation** (see below):		

Put an "S" in the appropriate column if the bird was seen, a "1" if the bird was heard, and "1S" if both heard and seen

Point #	Start Time (military)	Background noise	Species	Responded During: Pass 0-1	Pass 1-2	Pass 2-3	Pass 3-4	Pass 4-5	LEBI 5-6	SORA 6-7	VIRA 7-8	KIRA 8-9	AMBI 9-10	PBGR 10-11	Call type (s)	Distance (m)	Direction	Comments
																	O	
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Call types: LEBI: coo, kak, ank SORA: whinny, perweep, keep VIRA: grunt, ticket, kicker KIRA: kek-burr, grunt
AMBI: pump-er-lunk, kok PBGR: owhoop, hyena, ek-ek

If the call is not one of the above listed types, describe the call in the comments column.

Wind speed: 0 = <1 mph 1 = 1-3 mph 2 = 4-7 mph 3 = 8-12 mph 4 = 13-18 mph 5 = 19-24mph

Precipitation: light rain, rain, heavy rain, light snow, snow, heavy fog, fog, none

Background noise: 0 = no noise 1 = faint noise 2 = moderate noise (probably can't hear some birds beyond 100m)
3 = loud noise (probably can't hear some birds beyond 50m)
4 = intense noise (probably can't hear some birds beyond 25m)

Secondary species: W. Snipe, Marsh Wren, Black Tern, Common Tern, Common Moorhen, American Coot

Calling Amphibian Survey

Project Location: ~~[illegible]~~ ________ **Survey Date:** ________

Calling Location ID: ________ **Surveyor(s) Initials:** ________

Time START		Time STOP		Photo(s) Taken?

Climatic Variables

Amb Temp (°C) ________ Sur Temp (°C) ________

Amb RH (%) ________ Sur RH (%) ________

Circle One: (refer to codes on back)

Precipitation Code	0	1	2	3	4*	5*
Beaufort Wind Code	0	1	2	3	4*	5*

* - unsuitable to perform survey

Wildlife Observations

Calling Amphibians	Calling Intensity Code (refer to code on back)				# of Individuals
American Toad *B. americanus*	0	1	2	3	
Fowler's Toad *B. fowleri*	0	1	2	3	
Chorus Frog *P. triseriata*	0	1	2	3	
Spring Peeper *P. c. crucifer*	0	1	2	3	
Wood Frog *L. sylvatica*	0	1	2	3	
N. Leopard Frog *L. pipiens*	0	1	2	3	
Pickerel Frog *L. palustris*	0	1	2	3	
Gray Treefrog *H. versicolor*	0	1	2	3	
Cricket Frog *A. crepitans*	0	1	2	3	
Green Frog *L. c. melanota*	0	1	2	3	
Bullfrog *L. catesbeiana*	0	1	2	3	

Additional Species and Wildlife Observations: ________

Applied Ecological Services, Inc.

Precipitation Scale:

Precipitation Code	Description
0	No Precipitation
1	Fog/Mist
2	Light Rain/Drizzle
3	Moderate Rain. Steady precipitation but not too much noise pollution
4	Heavy Rain. Significant noise pollution. Impedes breeding beahavior.
5	Extreme weather. Hail, thunder, and/or lightening storms. Do not perform survey

Beaufort Wind Scale:

Beaufort Wind Scale	Wind Speed (mph)	Description
0	<1	CALM: smoke rises vertically
1	1 to 3	LIGHT AIR: rising smoke drifts; weathervane inactive
2	4 to 7	LIGHT BREEZE: leaves rustle; can feel wind on face
3	8 to 12	GENTLE BREEZE: leaves and twigs in constant motion
4	13 to 18	MODERATE BREEZE: moves small branches (too windy to monitor)
5	19 to 24	FRESH BREEZE: small trees sway (too windy to monitor)

Calling Intensity:

Calling Intensity Code	Description
0	No frogs or toads can be heard calling.
1	Individual calls (con-specific) are not overlapping. Count individuals
2	Some (con-specific) overlap of calls , but individuals still distinguishable
3	A full chorus/cacophony; constant, continuous, and overlapping calls (con-specific)

Additional Notes: ________

Applied Ecological Services, Inc.

ROS/TCS	Date		Surveyor	
Project Number		Time In	Time Out	
Description of Area				
IN		OUT		
Amb Temp		Amb Temp		
Amb RH		Amb RH		
Sur Temp		Sur Temp		
Sur RH		Sur RH		
Soil		Soil		
Other Weather Descriptions				
Photos?	Photographer?			
Species Observed and Relevant Notes:				

13.0 Testing, Inspection, Maintenance and Calibration Requirements

13.1 Instrument/Equipment Testing, Inspection, and Maintenance

All equipment for observational data collection is provided by AES and will be maintained by the project manager. Binoculars and spotting telescopes used for surveys will be regularly cleaned with forced air, brushes, lens cleaning solution, and lens paper and diopter calibrations will be done as needed. Prior to all survey efforts, batteries will be checked for power in thermo hygrometers, GPS units, cameras, cell phones, digital soil thermometers, and other battery operated equipment.

<u>Field Checklist</u>

EQUIPMENT	SUPPLIES	PERSONAL
Binoculars	Data Forms	Hat (Sun/Warmth)
Camera	Pens/Pencils (2)	Light/Heavy Gloves
GPS Unit	Field Guides	Raingear
Compass	Field Maps	Mud Boots
Clipboard	Road Maps	Hiking Boots
Hand Lens	Bird Call CDs/Tapes	Sunblock
Field Pack	Batteries AA (4)	Insect Repellent
Soil Thermometer	Bird Alpha Codes	Sunglasses
Spotting Telescope	Travel Itinerary	Water Bottle
Tripod	First Aid Kit	Credit Card/Cash
Thermo hygrometer		Food/Snacks
Small Collection Container		Cell Phone
Snake Bags		
Stump Ripper/Hook		
Reflective Mirror		

13.2 Instrumentation/Equipment Calibration and Frequency

No equipment critical to this survey effort will require any equipment calibration

13.3 Inspection/Acceptance of Supplies and Consumables

There are no acceptance criteria for field supplies relative to this survey effort..

14.0 Data Management

All geo-referencing, observational data, photographs, and other data generated or collected for this project will be documented and archived in its original format. These and other datasets, as needed, will be compiled as Excel spreadsheet files, database files, and GIS files and stored on a secure network. Consistent applications will be utilized for modeling and database creation methods.

AES will use standardized data sheets for data collection in the field. These sheets will be collected by the AES project manager following each individual survey effort, scanned/saved electronically, and stored in a file. At the end of every month these data sheets will be transcribed into prefabricated Excel spreadsheet templates.

In addition, AES will develop a data library of all pertinent data used in the project.

A strict file management and file naming structure will be used in order to ensure data efficiently, integrity and organization. AES QAO will be responsible for enforcing data management standards for each discipline.

The data library system is composed of a file folder system and a file directory database. When source data are collected, it is first entered into the "DATA" directory. The directory is subdivided into folders. Each data delivery or download is placed into a single file folder. The directory may be further subdivided upon delivery or to accommodate the needs of the data. While the data are in this directory, it is reviewed and processed as required to conform to library protocol (coordinate systems, field names, etc.). Any changes in format or content of the data will be noted.

Once the data enters the data library (FROMsource20081219), it is protected from any further manipulations. Copies of the data can then be checked out of the library for various uses including further manipulation, interpretation, and analysis. Any altered data are placed into a third folder named "AES" and is stored under the heading of the analysis, model, or manipulation performed.

AES will ensure that the most recent versions of their project information and work products are distributed to the appropriate personnel. In addition, the AES project manager will ensure that the most recent version of the QAPP is distributed to the appropriate personnel. At the completion of the project, the deliverable files will be included with the final report.

15.0 Assessment and Oversight

Assessments will occur at the outset and conclusion of each project phase. In addition, assessments will occur quarterly to ensure continued implementation of QA procedures. Assessments will be conducted by the AES and BNR Project Managers and QA Officers. As research is conducted, AES and BNR will maintain close communication with EPA as necessary. Should significant data quality issues arise; they will be documented and brought to the attention of the QA Officers and the EPA Project Manager.

AES and BNR will discuss any issues that arise as we gather information and develop deliverables. AES and BNR will identify any difficulties associated with locating necessary information or other unforeseen issues that could affect data collection or analysis. If any modifications to data collection or methods are significant, communication and approval will be sought from the EPA Project Manager.

As data are reviewed internally, checks will be made to flag missing, incomplete and/or erroneous data. If errors are discovered AES and BNR will discuss corrective action as necessary. The AES Project Manager and QA Officer will be responsible for identifying and implementing pertinent corrective action. The QA Officer's will be responsible for reviewing and approving corrective procedures associated with erroneous data.. If a problem persists or pertinent solutions are not agreed upon by both parties, insight from the EPA will be requested.

The AES and BRN Project Managers and QA Officers will review their respective agencies' deliverables. BRN and AES staff will ensure that all products are clearly written and free of typographical errors, and that they accurately describe any limitations of the information.

16.0 Data Review, Validation, Verification and Usability

This section describes the approach that will be used to assess the usability of field and analytical data and results generated for the AOC. The elements of Section D will be enacted in sequence with Quarterly Reports in order to ensure that the results meet the objectives of the project. At the end of Task 2 year one, the data will be reviewed and used and evaluated by BRN. Critical comments compiled in the evaluation of these data will be reconciled and corrected for year 2.

16.1 Data Review, Verification, and Validation

Data generated and collected for inclusion in the project will be reviewed according to the data quality objectives outlined in Section 8.0. Field data, summary tables, project results and conclusions will be reviewed for logical consistency as outlined in Section 8.0.

AES and BRN will identify and document data quality issues and deviations from Section 8.0's operating procedure and immediately bring them to the attention of the EPA Project Manager if significant.

The product quality reviewers will validate and verify the results of these reviews. This process requires:

- Reporting missing or questionable data,
- Reporting compensations for missing data,
- Conducting internal review of the work product by senior staff,
- Revising work products based on the technical direction from BNR.

Because this project involves the collection of primary baseline data, field results will be compared to other similar studies in the area. Field data will be evaluated and compared to information found at the reference site. In addition all data will be reviewed by an AES senior level staff person. Critical inspection of all data will include checks on identified species, frequency, abundance, and other that become necessary to the project. Unexpected results, findings or observations will be identified, documented and reaffirmed if possible.

The AES QA Officers will perform independent reviews of the information collected and the project deliverables generated by their team as described in Sections 7.0 and 8.0. Deliverables will also be reviewed by the Project Manager and the collaborating agency from which they originated. Project managers will discuss issues identified by QA Officers as appropriate to verify the action(s) necessary to resolve them. Project managers will then be responsible for seeing that the chosen corrective actions are executed.

16.2 Reconciliation with User Requirements

AES will provide deliverables in formats which facilitate the end use of the data they contain.

AES will generate draft reports and present them to BNR for review and comment as scheduled in the project timeline. For the purposes of this project and future projects which may be able to use the data generated in this project, the index system used by AES will include source information and a general description of any limitations of a data file.

17.0 Reporting, Documentation and Records

This project will involve an iterative process with open communication among AES, BRN, and EPA. Discussions will address quality assurance issues as needed and may include limitations and constraints in the information sources and/or assumptions made about the information.

Deliverables to be submitted with quality assurance information include:

- Draft and final QAPP
- GIS maps and field data/forms
- Electronic project files
- Progress reports
- Final Report

The following reports will be made available to all parties listed on the project Distribution List in Section 3.0 as they are produced: project status reports, results of performance evaluations, results of periodic data quality assessments, reports of significant QA problems, conducted as described in Section 15.0.

All documentation from AES and CC will be delivered via Microsoft Word and PDF format. Any presentations will be done in Microsoft PowerPoint. Geographic information will be in shapefile and PDF format. Summarized and statistical data will be in Microsoft Excel spreadsheet format. Digital delivery of final products will be nicely organized and delivered via CD or external hard drive with all necessary supporting data, including all digital photograph and digital audio files taken on site.

AES will provide sufficient server storage via a networked SAN storage system throughout the life of the project. This set up is designed to perform daily tape backups which are housed both on and off site for recovery purposes. In addition a secure File Transfer Protocol (FTP) is set up in order maximize efficiency for data transfer amongst the project team. AES will also back up and store all hard copy and electronic information (including working files) it generates for this project in its Conshohocken, PA office for five years after the contract's expiration date. The AES Project Manager will ensure that the most recent versions of AES's project information and work products are distributed to the appropriate personnel.

BNR will back up and store all finished hard copy and electronic information for this project in its Buffalo, NY office for five years after the contract's expiration date.

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Appendix III – Survey Data Sheets

Point Count Data Sheet

Calling Anuran Survey Data Sheet

TCS/ROS/Transect Sheet

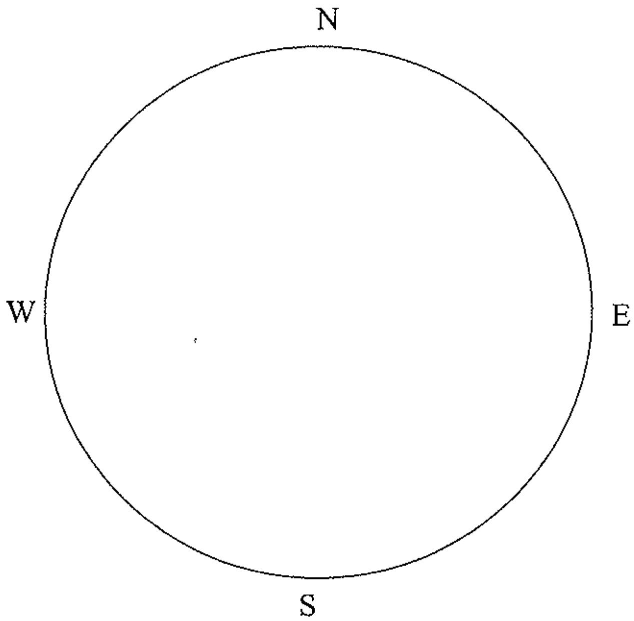
PASSERINE - Bird Point Count Data Sheet

Project Name ______________________ Sample Point ID # & Name ______________________

Date __________ Start Time __________ Stop Time __________ X coordinate, Y coordinate ______________________

Observer ______ Wind Spd. ______ Wind Dir. ______ Sky ______ Temp ______ Dominant (>50%) AES Habitat Type ______________________

Other Habitats______________________



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes

Calling Amphibian Survey

Project Location: ~~[illegible]~~ ______ **Survey Date:** ______

Calling Location ID: **Surveyor(s) Initials:** ______

Time START		Time STOP		Photo(s) Taken?

Climatic Variables

Amb Temp (^{0}C) ______ Sur Temp (^{0}C) ______

Amb RH (%) ______ Sur RH (%) ______

Circle One: (refer to codes on back)

Precipitation Code	0	1	2	3	4*	5*
Beaufort Wind Code	0	1	2	3	4*	5*

* - unsuitable to perform survey

Wildlife Observations

Calling Amphibians	Calling Intensity Code (refer to code on back)				# of Individuals
American Toad *B. americanus*	0	1	2	3	
Fowler's Toad *B. fowleri*	0	1	2	3	
Chorus Frog *P. triseriata*	0	1	2	3	
Spring Peeper *P. c. crucifer*	0	1	2	3	
Wood Frog *L. sylvatica*	0	1	2	3	
N. Leopard Frog *L. pipiens*	0	1	2	3	
Pickerel Frog *L. palustris*	0	1	2	3	
Gray Treefrog *H. versicolor*	0	1	2	3	
Cricket Frog *A. crepitans*	0	1	2	3	
Green Frog *L. c. melanota*	0	1	2	3	
Bullfrog *L. catesbeiana*	0	1	2	3	

Additional Species and Wildlife Observations:

Precipitation Scale:

Precipitation Code	Description
0	No Precipitation
1	Fog/Mist
2	Light Rain/Drizzle
3	Moderate Rain. Steady precipitation but not too much noise pollution
4	Heavy Rain. Significant noise pollution. Impedes breeding beahavior.
5	Extreme weather. Hail, thunder, and/or lightening storms. Do not perform survey

Beaufort Wind Scale:

Beaufort Wind Scale	Wind Speed (mph	Description
0	<1	CALM: smoke rises vertically
1	1 to 3	LIGHT AIR: rising smoke drifts; weathervane inactive
2	4 to 7	LIGHT BREEZE: leaves rustle; can feel wind on face
3	8 to 12	GENTLE BREEZE: leaves and twigs in constant motion
4	13 to 18	MODERATE BREEZE: moves small branches (too windy to monitor)
5	19 to 24	FRESH BREEZE: small trees sway (too windy to monitor)

Calling Intensity:

Calling Intensity Code	Description
0	No frogs or toads can be heard calling.
1	Individual calls (con-specific) are not overlapping. Count Individuals
2	Some (con-specific) overlap of calls , but individuals still distinguishable
3	A full chorus/cacophony; constant, continuous, and overlapping calls (con-specific)

Additional Notes:

ROS/TCS	Date		Surveyor	
Project Number		Time In	Time Out	
Description of Area				

IN		OUT	
Amb Temp		Amb Temp	
Amb RH		Amb RH	
Sur Temp		Sur Temp	
Sur RH		Sur RH	
Soil		Soil	

Other Weather Descriptions	
Photos?	Photographer?

Species Observed and Relevant Notes:

Small Mammal Trapping | **Buffalo River**

Date	Time Start
Location	Time End
Trap Day	
Temp	
Weather	

Species	Sex	Photo (Y/N)	Notes

Appendix IV - NYSDEC Scientific Collection Permit #1829

LICENSE

Under the Environmental Conservation Law (ECL)

Licensee Information

License Issued To:
MICHAEL J MCGRAW
APPLIED ECOLOGICAL SERVICES INC
708 WISTERIA DR
NEWTOWN SQUARE, PA 19073

(610) 238-9088

DEC Contact Information

DIVISION OF FISH, WILDLIFE AND MARINE RESOURCES
SPECIAL LICENSES UNIT
625 BROADWAY, ALBANY, NEW YORK 12233-4752
PHONE: (518) 402-8985 FAX: (518) 402-8925
WEBSITE: www.dec.state.ny.us

License Authorizations

License to Collect or Possess: Scientific
License # 1829

New License Effective Date: 7/16/2012 Expiration Date: 7/15/2013

NYSDEC Approval

By acceptance of this license, the licensee agrees that the license is contingent upon strict compliance with the ECL, all applicable regulations, and all conditions included as part of this license.

License Regulations

6 NYCRR Part 175
ECL 11-0515 (1)
6 NYCRR Part 189

LICENSE TO COLLECT OR POSSESS: SCIENTIFIC - LICENSE CONDITIONS

1. Collection from the Wild: Authorized Species, Specific The licensee is authorized to collect and possess the following species: Small mammals (NY Indigenous)

2. Scientific Collection - Authorized Activities The licensee is authorized to possess the collected species for the following activity(ies): Faunal assessment.

3. Scientific Collection - Location The licensee is authorized to collect species from the following locations only:
Lower Buffalo River, City of Buffalo, Erie County.

4. Scientific Collection - Authorized Collection Equipment General The licensee shall only collect authorized species using: Sherman live traps.

5. Scientific Collection – Gear Marking and Monitoring The licensee shall mark all gear deployed with the licensee's name, resident address and license type and number. All traps and nets shall be checked no less than once every twenty-four (24) hours.

6. Scientific Collection –Temporary Possession and Release The licensee shall possess the listed animal(s) only for the minimum time necessary for the collection of biological data. The licensee shall immediately release the listed animals unharmed at the point of original capture following the collection of biological data.

7. Scientific Collection – Removal of Species from the Wild Prohibited The licensee shall not remove the listed animals from the wild.

8. Scientific Collection - LCP - No Endangered or Threatened Species No endangered/threatened species may be collected or possessed pursuant to this license.

9. Scientific Collection - Federal and Local Licensing Requirements The licensee shall determine if a corresponding Federal or local Permit is required to exercise the authority granted in this license. If a corresponding Federal or local Permit is required, the licensee shall obtain a valid Federal or local Permit before conducting any activity pursuant to this license.

10. Scientific Collection - Law Enforcement Notification The licensee shall notify the appropriate Regional Environmental Conservation Officer at least 48 hours prior to conducting activities pursuant to this license and within 24 hours upon the loss or theft of any collecting gear. Please use the following link for a listing of regional law enforcement phone numbers: http://www.dec.ny.gov/about/558.html

11. Collection from the Wild - Authority to Designate Agents The licensee is authorized to designate agents to assist the licensee with the activities authorized pursuant to this license provided that:

a. the licensee submits a written request to the NYSDEC Special Licenses Unit at the address listed on the front of this license containing the:
i) name
ii) address

iii) age
iv) phone number of the person he or she is nominating as a designated agent, and;

b. the licensee receives an amended license from the Special Licenses Unit listing the designated agent(s) he or she has nominated before that person can conduct activities authorized by this license.

12. Authorized Designated Agents The following Designated Agents are authorized: Sheila Hess, and Nathan Grosse.

13. Scientific Collection - Reporting Requirement - Prior to Expiration The licensee shall file a written annual report prior to the expiration date of this license. Such annual report shall contain: a) name of the licensee, b) license number, c) common name of the listed animals collected, d) location(s) of collection, e) date(s) of collection, f) biological data collected and g) final disposition of collected animals. The licensee shall send this report to the NYSDEC Special Licenses Unit 625 Broadway, Albany, NY 12233-4752.

GENERAL CONDITIONS - Apply to ALL Authorized Licenses

1. GC – Licensee Shall Read All Conditions The licensee shall read all license conditions prior to conducting any activities authorized pursuant to this license.

2. GC – License is Not Transferrable This license is not transferrable and is valid only for the person identified as the licensee.

3. GC – Licensee Responsible for Federal, State or Local Permits/Licenses The licensee is responsible for obtaining any and all necessary, corresponding Federal, State or local permits or licenses prior to conducting any activity authorized pursuant to this license.

4. GC – Reasons for Revocation This license may be revoked for any of the following reasons:

i. licensee provided materially false or inaccurate statements in his or her application, supporting documentation or on required reports;
ii. failure by the licensee to comply with any terms or conditions of this license;
iii. licensee exceeds the scope of the purpose or activities described in his or her application for this license;
iv. licensee fails to comply with any provisions of the NYS Environmental Conservation Law, any other State or Federal laws or regulations of the department directly related to the licensed activity;
v. licensee submits a check, money order or voucher for this license or application for this license that is subsequently returned to the department for insufficient funds or nonpayment after the license has been issued.

5. GC – Licensee Shall Carry Copy of License The licensee shall carry a copy of this license or a document provided by the department, if relevant, when conducting activities pursuant to this license.

6. GC – Licensee Shall Notify of Change of Address The licensee shall notify the Special Licenses Unit in writing, by mail or email, within five (5) days of the official change of residence.

7. GC – Licensee is Liable for Designated Agents If designated agents are authorized pursuant to this license, the licensee shall be liable and responsible for any activities conducted by designated agents pursuant to this license or any actions by designated agents resulting from activities authorized by this license.

8. GC – Licensee Renewal The licensee shall submit a written request for the renewal of this license prior to the expiration date listed on the license. The licensee shall include accurate and complete copies of any required reports with their renewal request. This renewal paperwork shall be sent to:

NYSDEC
Special Licenses Unit
625 Broadway
Albany, NY 12233-4752.

This license is deemed expired on the date of expiration listed on the license.

NOTIFICATION OF OTHER LICENSEE OBLIGATIONS

MN– Licensee is Liable
The licensee shall be liable and responsible for any activities conducted under the authority of this license or any actions resulting from activities authorized by the license.

MN – Access by Law Enforcement
The licensee shall allow representatives of the NYS DEC Division of Law Enforcement to enter the licensed premises to inspect his or her operations and records for compliance with license conditions.

Trespassing Prohibited
This license is not a license to trespass. The licensee shall obtain permission from the appropriate landowner/land manager prior to conducting activities authorized pursuant to this license

Applied Ecological Services, Inc.

PLEASE DO NOT DISTURB: Wildlife Survey in Progress
NYSDEC License to Collect/Possess: Scientific # 1829
Licensee: Michael J. McGraw, 708 Wisteria Drive, Newtown Square, PA
Please call (610) 238-9088 with any questions

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Appendix V - Survey Effort Spreadsheet

Appendix V. Survey Effort Spreadsheet			Survey Hours Per Task by Date																											TOTALS
Task	Description	Survey Method	2011		2012																									
			21-Nov	22-Nov	22-Jan	23-Jan	24-Jan	19-Mar	3-Apr	4-Apr	27-Apr	3-May	9-May	10-May	11-May	29-May	5-Jun	15-Jun	27-Jun	31-Jul	1-Aug	2-Aug	24-Aug	10-Sep	11-Sep	12-Sep	15-Oct	16-Oct	17-Oct	
Bird Survey	Migratory (Spring)	Point Count	0	0	0	0	0	0	0	0	6	0	0	6	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18
	Breeding (Summer)	Point Count	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	6	6	0	0	0	0	0	0	0	0	0	0	18
	Migratory (Fall)	Point Count	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6.5	0	6	6	6	6	6	36.5
	Wintering	Point Count	0	6.5	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13.5
	General	TCS	0	0	0	4	0	0	0	2	2	0	2	2	1	1	1	1	2	1	0	1.25	0	0.5	1	0.5	1	0	0	23.25
	General	ROS	3	0	0	2	0	0.5	0	0.75	0	0	0.5	3	0	0.75	0	1	0	1.25	1.75	0.75	0	2	0	0.75	0	0	0	18
	General	Transect	1	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	5
Herpetofauna	General	TCS	0	0	0	0	0	2.5	2.5	4.5	3	0	4	3	5	5	2	2.5	3	0	0	3	0	3	4	3.5	0.75	3	3.25	57.5
	General	ROS	0	0	0	0	0	2	4	0	1.5	0	1	1.5	0.5	0	0.75	0	0	0	0	2	0	0.25	0	0.5	0.5	0	0	14.5
	General	Transect	0	0	0	0	0	0	3	0	1.5	0	0	0	0	0	2	1	0	0	0	2	0	0	0	0	0	0	0	9.5
	Anurans (breeding)	Calling Anuran Survey	0	0	0	0	0	0	0	4.5	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12.5
Mammals	Small Mammals	Sherman Live Trap Hours	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	720	720	0	0	0	0	0	0	720	720	2880
	General	TCS	0	1	2	1.75	2.5	2	0	0	2.5	0	0	3	0	0	0.5	0	0	0	0	0	0	2	0	0	0	0	0	17.25
	General	ROS	0	0	0.5	0.5	3	0.25	3	0	0	0	0	0.5	1	1.5	0	0.5	0	0	4.5	0	0	0.5	0	0	0	0	0	15.75
	Bats	Acoustic Monitoring	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0	0	0	0	30	30	0	66
	General	Transect	2	1	1	1	4	1	1	2	1	0	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	30
Total Effort per Day (may involve more than one surveyor)			6	10.5	10.5	9.25	9.5	8.25	13.5	13.75	21.5	4	8.5	20	14.5	10.25	13.25	13	13	729.25	727.25	10	6.5	9.25	12	12.25	39.25	760	730.25	3235.25

Appendix VI – Total Bird Species List

Table 2. Cumulative Bird Data from 2012 Wildlife Survey		Survey Point Locations																				
Common Name	**Scientific Name**	**BUF 101**	**BUF 102**	**BUF 103**	**BUF 104**	**BUF 105**	**BUF 106**	**BUF 107/ 109**	**BUF 108**	**BUF 110**	**BUF 112**	**BUF 113**	**BUF 114**	**BUF 115**	**BUF 116**	**BUF 117**	**BUF 118**	**BUF 119**	**BUF 120/ 111**	**BUF 121**	**BUF 122**	**OFFSITE ONLY**
red-throated loon	*Gavia stellata*	X																				X
common loon	*Gavia immer*	X																				X
pied-billed grebe	*Podylimbus podiceps*																			X		
double-crested cormorant	*Phalacrocorax auritus*	X	X	X				X	X	X	X	X	X	X				X	X	X	X	
great blue heron	*Ardea herodias*	X		X	X		X			X	X			X	X			X	X	X	X	
great egret	*Ardea alba*								X													
green heron	*Butorides virens*			X							X			X				X				
black crowned night-heron	*Nycticorax nycticorax*	X																				X
tundra swan	*Cygnus columbianus*	X																				X
Canada goose	*Branta canadensis*	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	
snow goose	*Chen caerulescens*	X																				X
graylag goose (domestic)														X								X
wood duck	*Aix sponsa*				X			X	X		X			X	X							
mallard	*Anas platyrhynchos*	X		X	X			X	X	X	X	X	X	X	X	X		X		X	X	
American black duck	*Anas rubripes*	X		X							X			X						X		
gadwall	*Anas strepera*																				X	
northern pintail	*Anas acuta*																					X
American wigeon	*Anas americana*																					X
northern shoveler	*Anas clypeata*																					X
blue-winged teal	*Anas discors*																					
green-winged teal	*Anas crecca*																					
canvasback	*Aythya valisineria*																					X
redhead	*Aythya americana*																					X
ring-necked duck	*Aythya collaris*			X																		X
greater scaup	*Aythya marila*																					X
lesser scaup	*Aythya affinis*	X																				X
long-tailed duck	*Clangula hyemalis*	X																				X
surf scoter	*Melanitta perspicillata*	X																				X
black scoter	*Melanitta nigra*	X																				X
common goldeneye	*Bucephala clangula*																					X
bufflehead	*Bucephala albeola*	X																				X
hooded merganser	*Lophodytes cucullatus*	X																				X
common merganser	*Mergus merganser*	X																				X
red-breasted merganser	*Mergus serrator*	X																				X

ruddy duck	*Oxyura jamiacensis*	X																				X
turkey vulture	*Cathartes aura*		X	X				X	X	X		X	X	X	X	X	X	X	X	X	X	
sharp-shinned hawk	*Accipiter striatus*														X	X	X		X		X	
Coooper's hawk	*Accipiter cooperii*		X	X	X	X			X		X		X						X		X	
broad-winged hawk	*Buteo platypterus*											X										
red-tailed hawk	*Buteo jamaicensis*	X	X	X					X		X				X	X		X		X	X	
bald eagle	*Haliaeetus leucocephalus*	X														X		X	X	X		
osprey	*Pandion haliaetus*							X											X	X	X	
merlin	*Falco columbarius*						X			X									X	X		
American kestrel	*Falco sparverius*		X												X	X	X			X	X	
peregrine falcon	*Falco peregrinus*									X												
wild turkey	*Meleagris gallopavo*										X								X		X	
American coot	*Fulicula americana*																					X
semipalmated plover	*Charadrius semipalmatus*			X																		
killdeer	*Charadrius vociferus*	X	X	X															X	X	X	
lesser yellowlegs	*Tringa flavipes*								X					X								
solitary sandpiper	*Tringa solitaria*			X					X							X					X	
spotted sandpiper	*Actitis macularia*	X		X	X					X	X	X				X				X	X	
sandpiper sp.	*Calidris sp.*	X																				X
American woodcock	*Scolopax minor*																		X			
red-necked phalarope	*Phalaropus lobatus*	X																				X
little gull	*Larus minutus*	X																				X
Bonaparte's gull	*Larus philadelphia*	X																				X
black-headed gull	*Larus ridibundus*	X																				X
laughing gull	*Larus atricilla*	X																				X
ring-billed gull	*Larus delawarensis*	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
herring gull	*Larus argentatus*	X	X	X							X	X	X					X			X	
glaucous gull	*Larus hyperboreus*	X																				X
great black-backed gull	*Larus maritimus*	X																			X	
Sabine's gull	*Xerna sabini*	X																				X
Caspian tern	*Sterna caspia*	X		X	X																	
common tern	*Sterna hirundo*	X	X																			
Forster's tern	*Sterna forsteri*	X		X																		
black tern	*Chlidonias niger*	X																				X
mourning dove	*Zenaida macroura*		X	X		X	X	X	X	X	X			X	X		X	X	X	X		
rock pigeon	*Columba livia*		X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X		X	
yellow-billed cuckoo	*Coccyzus americana*														X							X
great-horned owl	*Bubo virginianus*															X						X

snowy owl	*Nyctea scandiaca*	X																				X
common nighthawk	*Chordeiles minor*																X	X	X			
chimney swift	*Chaetura pelagica*	X	X	X	X	X		X	X	X	X							X	X	X	X	
ruby-throated hummingbird	*Archilochus colubris*														X							X
belted kingfisher	*Ceryle alcyon*			X					X		X	X	X	X	X	X				X	X	
red-bellied woodpecker	*Melanerpes carolinus*				X						X		X	X	X	X	X					
yellow-bellied sapsucker	*Sphyrapicus varius*										X											
downy woodpecker	*Picoides pubescens*					X	X		X	X	X	X		X	X	X	X	X	X			
hairy woodpecker	*Picoides villosus*						X			X					X	X						
northern flicker	*Colaptes auritus*							X	X	X	X	X		X		X		X	X	X		
pileated woodpecker	*Dryocopus pileatus*									X									X			
eastern wood-pewee	*Contopus virens*										X											
willow flycatcher	*Empidonax traillii*			X		X	X					X			X		X	X	X			
alder flycatcher	*Empidonax alnorum*						X	X														
least flycatcher	*Empidonax minimus*										X				X	X						
eastern phoebe	*Sayornis phoebe*					X			X				X		X		X					
great-crested flycatcher	*Myiarchus crinitus*									X		X			X							
eastern kingbird	*Tryrannus tyrannus*								X											X	X	
red-eyed vireo	*Vireo olivaceus*					X			X	X	X				X	X	X					
warbling vireo	*Vireo gilvus*									X	X	X	X	X	X	X	X	X	X			
Philadelphia vireo	*Vireo philadelphicus*														X							X
yellow-throated vireo	*Vireo flavifrons*														X							X
blue-headed vireo	*Vireo solitaria*								X		X				X	X						
blue jay	*Cyanocitta cristada*				X	X	X		X	X		X		X	X	X	X		X			
American crow	*Corvus brachyrhynchos*	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
horned lark	*Eremophila alpestris*																		X	X	X	
northern rough winged swallow	*Steglidopteryx serripennis*	X	X	X		X			X	X	X	X		X	X	X		X	X	X	X	
tree swallow	*Tachycineta bicolor*	X	X		X			X			X	X	X	X				X	X	X	X	
barn swallow	*Hirundo rustica*	X	X	X	X	X		X	X	X				X		X		X	X	X	X	
tufted titmouse	*Baeolophus bicolor*								X	X	X	X			X		X					
black-capped chickadee	*Poecile atricapilla*						X	X	X	X	X	X		X	X	X	X					
red-breasted nuthatch	*Sitta canadensis*										X				X							
white-breasted nuthatch	*Sitta carolinensis*										X			X	X	X	X		X			
brown creeper	*Certhia americana*										X				X	X						
Carolina wren	*Thryothorus ludovicianus*														X		X					
house wren	*Troglodytes aedon*					X	X	X	X	X	X	X	X	X	X	X	X	X			X	
winter wren	*Troglodytes troglodytes*														X							
golden-crowned kinglet	*Regulus satrapa*				X				X		X	X		X	X	X	X	X				

ruby-crowned kinglet	*Regulus calendula*				X				X		X				X							
eastern bluebird	*Sialia sialis*																				X	
American robin	*Turdus migratorius*	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Swainson's thrush	*Catharus ustulatus*								X													
gray catbird	*Dumetella carolinensis*				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
northern mockingbird	*Mimus polyglottos*				X															X		
brown thrasher	*Toxostoma rufum*						X	X		X						X			X		X	
European starling	*Sturnus vulgaris*	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
cedar waxwing	*Bombycilla cedrorum*						X	X	X	X	X	X	X	X	X	X	X		X	X		
northern parula	*Parula americana*														X							X
orange-crowned warbler	*Oreothylpis celata*								X										X			
Tennessee warbler	*Oreothylpis peregrina*					X																
Nashville warbler	*Oreothylpis ruficapilla*					X	X		X		X				X	X	X	X	X			
yellow warbler	*Setophaga petechia*	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
chestnut-sided warbler	*Setophaga pennsylvanica*					X	X		X	X		X		X		X						
magnolia warbler	*Setophaga magnolia*			X		X		X	X		X	X										
black-throated blue warbler	*Setophaga caerulescens*										X											
blackburnian warbler	*Setophaga fusca*															X						X
yellow-rumped warbler	*Setophaga coronata*					X	X		X		X		X	X	X	X	X		X			
black-throated green warbler	*Setophaga virens*						X			X	X	X	X									
palm warbler	*Setophaga palmarum*			X					X		X											
pine warbler	*Setophaga pinus*										X											
bay-breasted warbler	*Setophaga castanea*														X							X
blackpoll warbler	*Setophaga striata*										X								X			
black-and-white warbler	*Mniotila varia*									X												
American redstart	*Setophaga americana*														X	X						
ovenbird	*Seiurus aurocapillus*															X						
mourning warbler	*Geothylpis philadelphia*														X							X
common yellowthroat	*Geothylpis trichas*							X	X	X	X	X			X	X	X	X	X			
Wilson's warbler	*Cardinella pusilla*																					X
northern cardinal	*Cardinalis cardinalis*	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	
rose-breasted grosbeak	*Pheucticus ludivicianus*						X		X		X											
indigo bunting	*Passerina cyanea*						X		X	X	X			X	X		X					
eastern towhee	*Pipilo ertythrophthalmus*								X													
American tree sparrow	*Spizella arborea*		X								X	X		X	X			X	X			
field sparrow	*Spizella pusilla*		X															X	X		X	
chipping sparrow	*Spizella passerina*	X	X			X								X			X					
grasshopper sparrow	*Ammodramus savannarum*																		X	X	X	

savannah sparrow	*Passerculus sandwichensis*	X	X															X	X	X	X	
vesper sparrow	*Poecetes gramineus*																		X	X	X	
white-thoated sparrow	*Zonotrichia albicolis*				X	X		X	X	X	X	X	X	X		X	X	X	X		X	
white-crowned sparrow	*Zonotrichia leucophrys*								X	X								X	X			
song sparrow	*Melospiza melodia*	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Lincoln's sparrow	*Melospiza lincolnii*														X			X				
swamp sparrow	*Melospiza georgiana*		X															X				
dark-eyed junco	*Junco hyemalis*	X	X		X				X	X		X	X					X				
snow bunting	*Plectrophenax nivalis*		X	X																		
eastern meadowlark	*Sternella maximus*																			X		
bobolink	*Dolichonyx oryzivorus*																				X	
brown-headed cowbird	*Molothrus ater*			X			X	X	X			X	X		X				X			
red-winged blackbird	*Agelaius phoeniceus*	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
common grackle	*Quicalus quiscula*			X	X	X		X	X	X	X	X		X	X	X	X		X		X	
Baltimore oriole	*Icterus galbula*			X						X	X	X			X	X	X	X	X		X	
orchard oriole	*Icterus spurius*																X					X
purple finch	*Carpodacus purpureus*											X										
house finch	*Carpodacus mexicanus*				X	X	X	X	X	X			X									
pine siskin	*Carduelis pinus*	X					X			X		X										
American goldfinch	*Carduelis tristis*	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
house sparrow	*Passer domesticus*			X	X	X	X					X	X									
Confirmed Breeding	Probable Breeder	Migration or Possible Breeder							Wintering						**Color Code**							

Appendix VII – Bat Survey Supplemental Report

Bat Activity at the Buffalo River Project: Draft Report

BUFFALO, NEW YORK

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1. INTRODUCTION

Bat conservation and management have received recent attention due to both real and perceived population declines that have been attributed to numerous human-induced environmental changes and degradation (Fenton 1997; Pierson 1998; O'Shea et al. 2003). Although human population growth with simultaneous land use changes such as urbanization undoubtedly have had an impact on bat populations, community compositions, and habitat use of bats through modification or loss of roosting substrates, foraging habitats, and insect prey availability (Kurta and Teramino 1992; Pierson 1998; Ghert and Chelsvig 2003, 2004; Avila-Flores and Fenton 2005). Recent research indicates different bat species vary in their response to urbanization (Kurta and Teramino 1992; Ghert and Chelsvig 2004). Although some species such as big brown bats (*Eptesicus fuscus*) exploit urban areas as roosting and foraging habitats (Everette et al. 2001; Menzel et al. 2001), other species such as Indiana myotis (*Myotis sodalis*) are more sensitive to urbanization (Duchamp et al. 2004; Sparks et al. 2005). Within urbanized landscapes, many bat species use remnant forest patches, as their high mobility allows them to utilize patches in otherwise unsuitable surroundings (Clergeau et al. 2001; Ghert and Chelsvig 2003).

Bat habitat selection may occur as a hierachical series of decisions, beginning at the geographic or landscape scale and ending at the local or home-range scale (Johnson 1980; Ford et al. 2006; Loeb and O'Keefe 2006). Differences in bat community composition at the distributional and landscape scales have been attributed to natural influences, including summer roost diversity, proximity to winter hibernacula, topography, latitude, and climate conditions (Humphrey 1975; Graham 1983; Furlonger et al. 1987; Patten 2004) as well as human-induced land use changes, such as urbanization and deforestation (Ghert and Chelsvig 2003, 2004; Duchamp et al. 2004; Owen et al. 2004; Sparks et al. 2005). At the local scale, habitat use likely is a consequence of day-roost preferences and availability, presence of water sources, and foraging preferences, which are largely dictated by morphological and echolocation adaptations (Barclay 1986; Aldridge and Rautenbach 1987; Kalcounis and Brigham 1995; Ford et al. 2005, 2006).

Our objective was to determine if bat species distributions and activity levels were affected by different vegetation cover and canopy densities in the project area. Specifically, we examined species-specific and overall bat activity throughout the project site, with representative stations occurring in different natural communities with few containing varying degrees of forest fragmentation.

2. STUDY AREAS

Prior to conducting the acoustic bat surveys, we inventoried natural areas of the Buffalo River Project and adjacent land areas. The natural areas within the project limit ranged in size from ~1 – 50 acres, all with varying degree of human disturbance. Natural areas and surrounding habitats were characterized as successional old field, pond, floodplain forest, and wet meadow. Descriptions of each natural community are listed below.

Successional Old Field: This natural community is dominated by forbs and grasses and occurs on sites within the project area that have been cleared or used for development, and then abandoned. Species observed in these areas include goldenrods (*Solidago* spp.), bluegrasses (*Poa pratensis* and *P. compressa*), timothy (*Phleum pretense*), quackgrass (*Agropyron repens*), brome (*Bromus inermis*), orchard grass (*Dactylis glomerata*), common evening primrose (*Oenothera biennis*), cinquefoil (*Potentilla* spp.), calico aster (*Aster lateriflorus*), New England aster (*Aster novae-angliae*), wild strawberry (*Fragaria virginiana*), Queen-Anne's lace (*Daucus carota*), ragweed (*Ambrosia artemisiifolia*), and dandelion (*Taraxacum officinale*). Few scattered shrubs and trees were present in these communities, and included dogwood species (*Cornus* spp.) and cottonwood saplings (*Populus deltoides*). Areas that would be classified as a successional old field include River Bend, Pork Pig, and portions of the Seneca Bluffs site. These areas are not as advantageous for bats due to decreased insect availability, but could be used in transit to other areas of the project.

Pond: This natural community is dominated by forbs and grasses, and occurs on sites within the project area that are currently used for recreational purposes. Species observed in this natural community included duckweeds (*Lemna minor, L. trisulca*), waterweed (*Elodea canadensis),* pondweeds (*Potamogeton* spp.), and white water-lily (*Nymphawa odorata).* These ponds may be slightly eutrophic, and could include several different species of fishes and macroinvertebrates. Areas in the project location that would be classified as a pond include the Smith Road site. These areas can be advantageous for bats due to high insect availability and ease of maneuverability if ponds are relatively free of floating vegetation for drinking water purposes.

Floodplain Forest: This natural community is defined as an area that occurs on mineral soils on low terraces of river floodplains. These natural areas are characterized by the flood regime, typically flooding in spring and drying out in late summer. Species observed in this natural community include willow (*Salix* species), butternut and black walnut (*Juglans cinera, J. nigra*), oaks (*Quercus bicolor, Q. palustris*), and box elder (*Acer negundo*). Several other tree species may also occur. Shrub species observed in this community included dogwoods (*Cornus* spp.), viburnums (*Viburnum* spp.), and honeysuckles (*Lonicera* spp.). Herbaceous vegetation observed in this community included sensitive fern (*Onoclea sensibilis*), ostrich fern (*Metteuccia struthiopteris*), goldenrods (*Solidago* spp.), jewelweeds (*Impatiens capensis, I. pallida*), and abundant Japanese knotweed (*Polygonum cuspidatum*). Areas in the project location that would be classified as a floodplain forest include Bally Street Woods and portions of Seneca Bluffs. These areas can be advantageous for bats due to high insect availability and ease of maneuverability if little understory is present.

Wet Meadow: This natural community is defined as an area that occurs in poorly drained areas such as low-lying depressions and in the areas between water bodies and upland areas. Precipitation is the primary water supply for these areas, and they often dry out in summer months. Characteristic herbaceous species in these communities include water plantain (*Alisma plantago-aquatica*), beggar-ticks (*Bidens frondosa*), horsetail (*Equisetum arvense*), spikerush (*Eleocharis* spp.), phragmites (*Phragmites australis*), and bulrushes (*Scirpus* spp.). Tree species include scattered cottonwood (*Populus deltoides*) and sycamores (*Platanus occidentalis*). Areas in the project location that would be classified as a wet meadow include portions of the Seneca Bluffs site. These areas can be advantageous for bats due to high insect activity and ease of maneuverability due to little canopy cover.

3. MATERIALS AND METHODS

Bat activity data were collected using broadband acoustic detectors (AnaBat SD-2 zero-crossing ultrasonic detectors, Titley Electronics Pty. Ltd., Ballina, NSW Australia). AnaBat detectors record the frequency of bat echolocation calls over time to compact flash cards (CF cards). Four detectors were deployed for a one night study on October 16, 2012. The AnaBat detectors were all located at or slightly above (<1 foot) ground level.

Deployment locations were selected based on a previous site assessment and bat habitat suitability. All detectors were located in different urban landscapes, with varying herbaceous cover types and percent of tree/shrub cover.

All microphones were positioned directly up to create the maximum zone of reception for collecting data. The detectors were powered by 4 – AA batteries. The detectors were turned on at deployment and were powered down when sampling concluded. Detector sensitivity was calibrated prior to field deployment according to Larson and Hayes (2000).

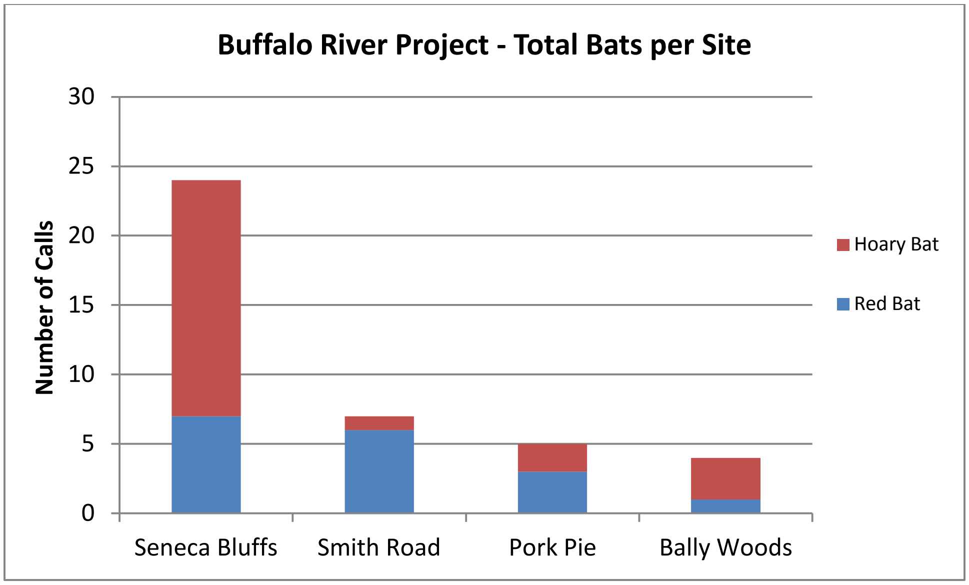
Bat acoustic monitoring data were downloaded after field investigations. Each data file was downloaded using a computer application program, *cfcread.exe*, designed for downloading and processing AnaBat data. Once the data were downloaded, they were transferred for later analysis to a folder with the site name, card number and date of download. Each card was given a specific number which correlated to the monitoring location and unit number.

Data from detectors was downloaded and processed following field investigations. Prior to summary and analysis, all irrelevant noise was eliminated from the data using filters in the AnaBat analysis program, Analook. The clean bat calls were placed in previously labeled bat call files with monitoring location, CF card number and date of download. We defined a bat call as a series of ≥2 echolocation calls with duration of ≥10 ms (Hayes 1997; Thomas 1988; Weller 2007). Each call file was visually inspected to determine whether it was a bat pass. Bat passes were then identified to species, comparing minimum frequency and call shape to a library of vocal signatures (O'Farrell et al. 1999). Unidentifiable calls were labeled as being produced by high (≥35 kHz) or low (<35 kHz) frequency echolocating bats, based on their minimum frequency. Voucher calls are reported in Appendix 2.

4. RESULTS

We conducted acoustic bat surveys on four different sites located throughout the Buffalo River Project site. We recorded a total of 40 bat passes during acoustic bat surveys representing two species of bats. The Hoary Bat (*Lasiurus cinereus*) was the most frequently recorded species during the survey (57.5 % of all calls). The Hoary Bat is the largest bat and is also one of the most widespread species in the U.S. Hoary bats typically emerge late in the evening, hunting at higher elevations over treetops, clearings, fields, and over streams. The Red Bat (*Lasiurus borealis*) was also recorded at all sites and comprised 42.5% of all calls. The Red Bat is a medium-sized bat with long pointed wings and short rounded ears. This bat emerges early in the evening, commonly feeding below streetlights, among trees, and over water.

Table 1. Total number of bat passes recorded at each monitoring location.



Bat activity varied among monitoring locations (Tables 1 and 2). The Seneca Bluffs site had the greatest activity with a total of 24 recorded bat passes during the field investigations (17 Hoary, 7 Red Bats), followed by the Smith Road site, 7 passes (1 Hoary, 6 Red Bats), the Pork Pie site, 5 passes (2 Hoary, 3 Red Bats), and Bally Street Woods site, 4 passes (3 Hoary, 1 Red Bat).

Table 2. Total number of bat passes by species recorded at each monitoring location.

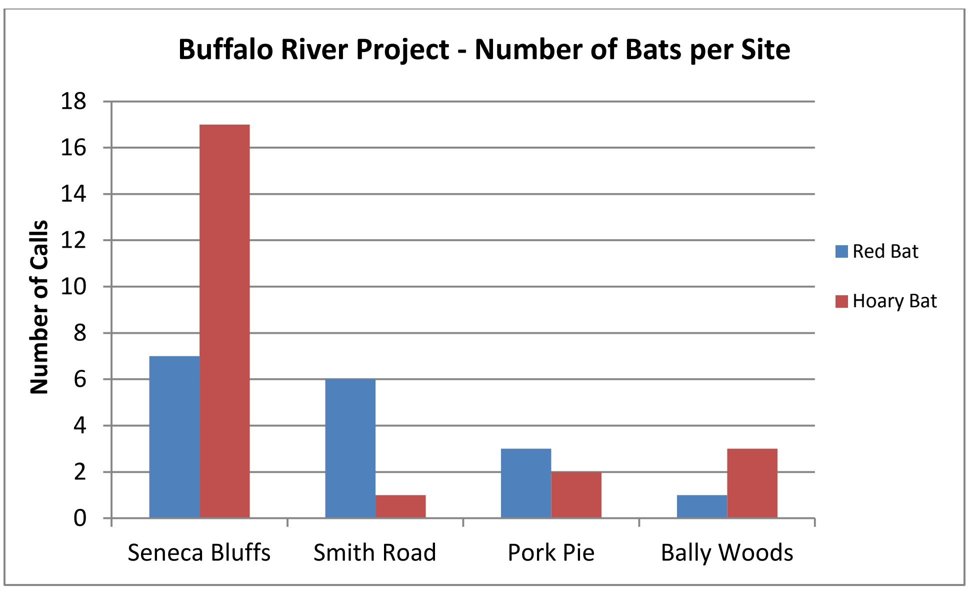
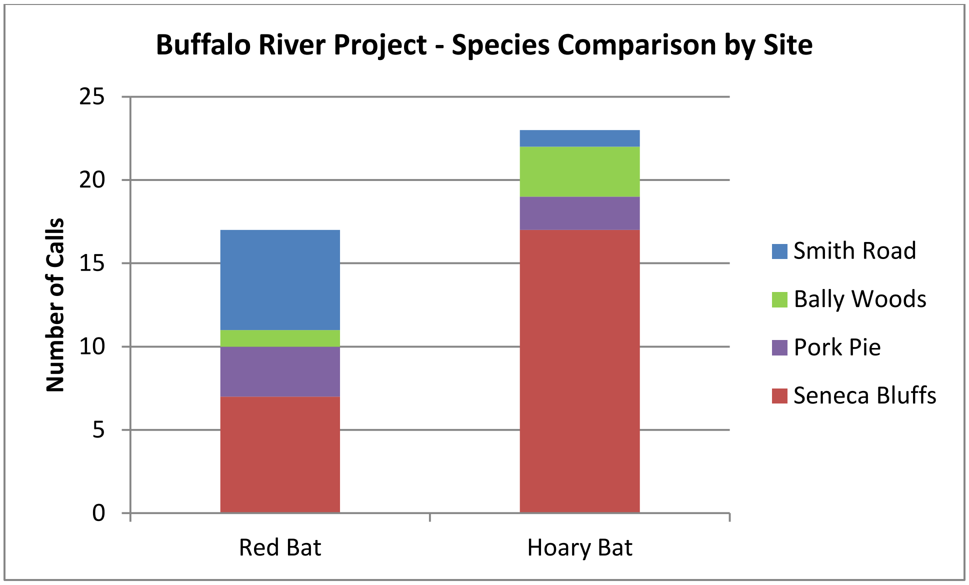


Table 3. Species comparison by site location.



The Seneca Bluffs site recorded the highest amount of bat passes (60% of all calls recorded) (Table 3). This site is characterized as a restored prairie with sedge meadow inclusions along the Buffalo River. The Smith Road site also had a higher amount of calls (17.5% of all calls) and is described as an open-pond area surrounded by fragmented tree canopy with a recreational walking trail. The Pork Pie site is characterized as a successional old field with scattered young cottonwood saplings and totaled 12.5% of all recorded passes. The remaining site, Bally Woods, recorded a total of 4 of 40 total calls (10%). Bally Woods is a floodplain forest site with large cottonwood, willow, oak, and walnut, with a relatively closed canopy.

5. Discussion

We positively identified two of the eight bat species that could potentially occur within the project boundaries (BCI 2012); both Red and Hoary Bats are considered common in this region.

The results of this study agree with theories on the effects of species morphology on the structure of foraging bat communities and habitat use (Fenton 1990, Menzel et al. 2005, Norberg and Ryaner 1987, Saunders and Barclay 1992). Flight activity levels of large-bodied bat species, with faster but less maneuverable flight (i.e. big brown, red, and hoary bats), was significantly less in closed-canopy, cluttered habitats, compared to less-cluttered, open-canopy habitats (Table 3).

In addition, many bats drink from, and forage directly over, water sources (Kunz & Fenton 2003, Hayes 2004, Korine & Pinshow 2004, Menzel et al. 2005a). Bats prefer large, open, calm bodies of water (Mackey & Barclay 1989, Warren et al. 2000, Siemers et al. 2001). Riparian zones generally have higher insect abundance due to the addition of emerging aquatic insects to terrestrial systems (Jackson & Fisher 1986, Jackson & Resh 1989). Calm water produces less ultrasound interference and this facilitates hearing returning echoes used to detect prey (Mackey & Barclay 1989, Warren et al. 2000, Siemers et al. 2001). Water with low habitat complexity creates an environment that enables bats to navigate and detect prey (Mackey & Barclay 1989). Water sources, such as rivers and streams, can also be used as corridors for flight. Upon emerging from roosts, bats navigate to foraging grounds by flying along streams (Kalcounis & Brigham 1995, Sleep & Brigham 2003).

Given the success of this preliminary survey, we believe additional bat research in the project area is warranted. Continued and more extensive acoustic surveys (time and space), are needed to affirm these findings and to determine if and where additional species occur in the Buffalo River Site. Restored open-space areas would appear to support an abundant and rich bat community.

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APPENDIX 1. SITE PHOTOS

Photo 1. River Bend Site (old field). **Photo 2. River Bend Site (old field).**

Photo 3. Bally St. Woods (floodplain forest). **Photo 4. Bally St. Woods (floodplain forest).**

Photos 5 and 6. Seneca Bluffs (wet meadow/floodplain forest).

Photo 7. Pork Pie Site (old field).

Photo 8. Pork Pie Site (old field).

Photo 9. Smith Road Site (pond).

Photo 10. Smith Road Site (pond).

APPENDIX 2. VOUCHER CALLS

1. Hoary Bat (*Lasiurus cinereus*) at the Seneca Bluffs Site.

2. Hoary Bat (*Lasiurus cinereus*) at the Seneca Bluffs Site.

3. Eastern Red Bat (*Lasiurus borealis*) at the Pork Pie Site.

4. Eastern Red Bat (*Lasiurus borealis*) at the Seneca Bluffs Site.

Appendix VIII – Original Data Sheet Scans

Avifaunal Point Count Data Sheets

Calling Anuran Survey Data Sheets

Small mammal Trapping Data Sheets

PASSERINE - Bird Point Count Data Sheet

Project Name: BUF RIV 11-[illegible]

Sample Point ID # & Name: BUF [illegible] LAKE ERIE

Date: 11 [illegible]

Start Time: 0715

Stop Time: 0725

X coordinate, Y coordinate: 42.967773, 78.887409

Observer: [illegible]

Wind Spd.: [illegible]

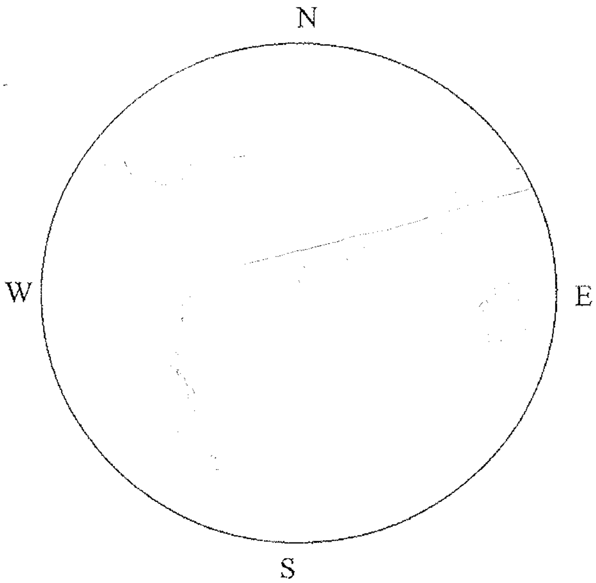
Wind Dir.: [illegible]

Sky: [illegible]

Temp: [illegible]°

Dominant (>50%) AES Habitat Type: [illegible]

Other Habitats: [illegible] Lake/Developed



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
[illegible]	F/F	NW	50-[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			100
[illegible]	F	NW	[illegible]	var	[illegible]	1	→	→			30
[illegible]	[illegible]	NW	125	[illegible]	0-3			I			1
[illegible]	[illegible]	W	75	[illegible]	[illegible]			IIII	?		5
	[illegible]	NW	[illegible]	[illegible]	50			II			2
	F	[illegible]	[illegible]	[illegible]	10			II			2

PASSERINE - Bird Point Count Data Sheet

Project Name: [illegible]

Sample Point ID # & Name: [illegible] Lake

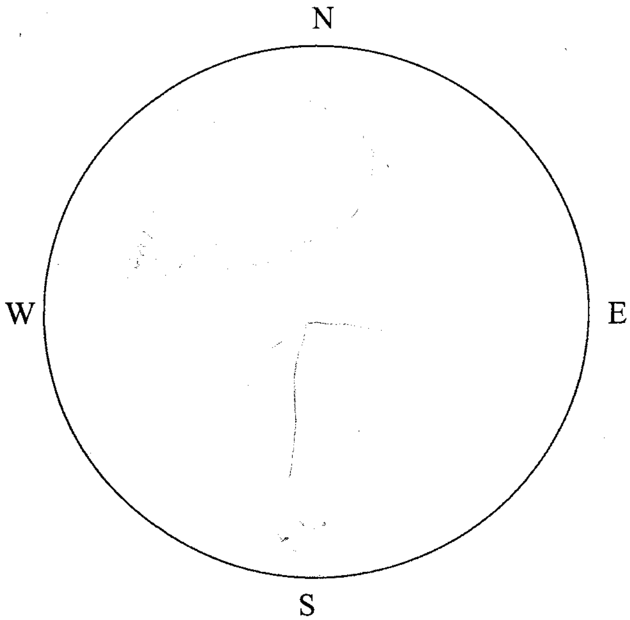
Date: [illegible] | Start Time: 0900 | Stop Time: 0910

X coordinate, Y coordinate:

Observer: [illegible] | Wind Spd.: 1 | Wind Dir.: S | Sky: 0 | Temp: 22

Dominant (>50%) AES Habitat Type:

Other Habitats:



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
RBME	[illegible]	N SW	250-750			[illegible]	→				
[illegible]	[illegible]		"			[illegible]	→				
[illegible]	[illegible]	S	200	[illegible]		[illegible]	→				[illegible] SNZG in upper [illegible]
[illegible]		NW	[illegible]	[illegible]		[illegible]					
[illegible]		W	[illegible]			[illegible]					
[illegible]		SW	[illegible]			[illegible]					[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]					
[illegible]		[illegible]		[illegible]	[illegible]			[illegible]			
PISI	F	N	0	S	75			[illegible]			over head

flushed + [illegible] on [illegible]

[illegible]

PASSERINE - Bird Point Count Data Sheet

Buff Riv 11-0543
Project Name

Buff 101 Lake Erie
Sample Point ID # & Name

4/27/12
Date

12:00 pm
Start Time

12:10 pm
Stop Time

42.867773, 78.882409
X coordinate, Y coordinate

NG
Observer

4.3 mph
Wind Spd.

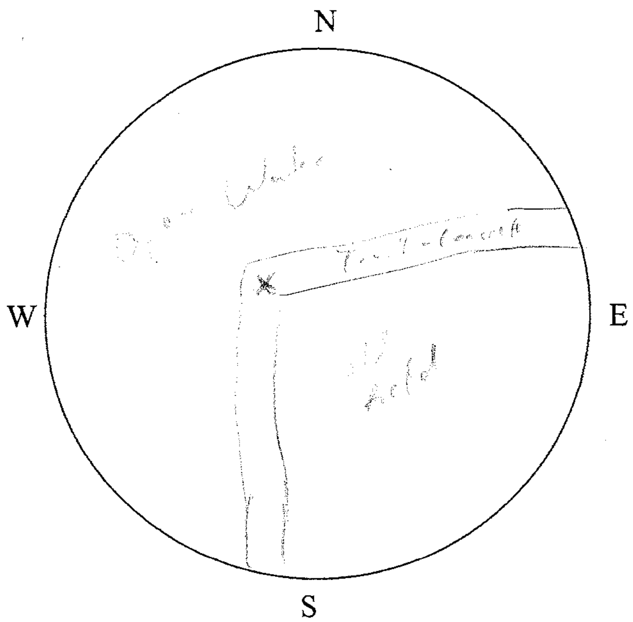
Wind Dir.

2
Sky

43.8°F
Temp

Open Water
Dominant (>50%) AES Habitat Type

Other Habitats Grassland / Developed



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
RBGU	F/Fo		var		var	I	III	IIII			
BUFF	P		var		On	I					Bufflehead
CATE	F/Fo		var		var		~~IIII~~				Caspian Tern
HFGU								III			

PASSERINE - Bird Point Count Data Sheet

Project Name: ______

Sample Point ID # & Name: BUFF 101

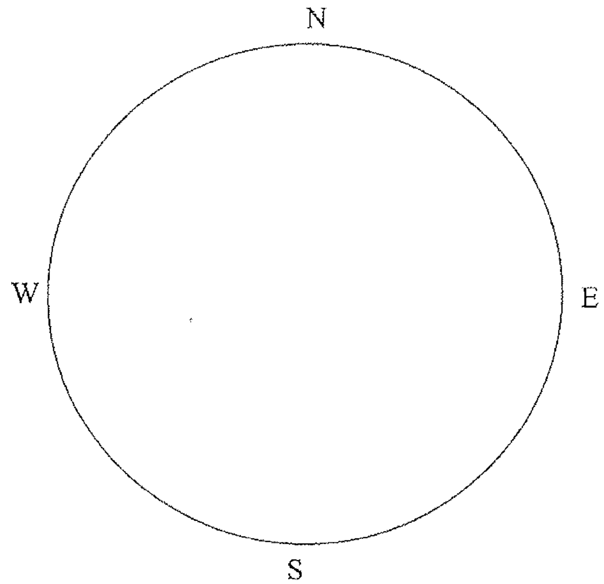
Date: 5/10/12 | Start Time: 1257 PM | Stop Time: 107 PM

X coordinate, Y coordinate: ______

Observer: NG/MM | Wind Spd.: 3 | Wind Dir.: W | Sky: 1-2 | Temp: 57°F

Dominant (>50%) AES Habitat Type: ______

Other Habitats: ______



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
COTE	F	E	40m	W	[illegible]	1	100+				[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1	7				
RBGU	F/Fo	W	10-15m	S	5m	11	200+				
GBBG	F/Fo	W	75m	N	10m		1111				
HEGU	F/Fo	W	500m	N	20m		11				
BOGU	F/Fo	W	500m	N	20m		1				
BARS	Fo	W	[illegible]	W	1m		1				
DCCO	F/P	W	300m	—	2m/[illegible]		15+				
COLO	?	W/NW	1000m	—	0m		1				
											RTLO - [illegible]
											[illegible]
											AMKE - foraging

PASSERINE - Bird Point Count Data Sheet

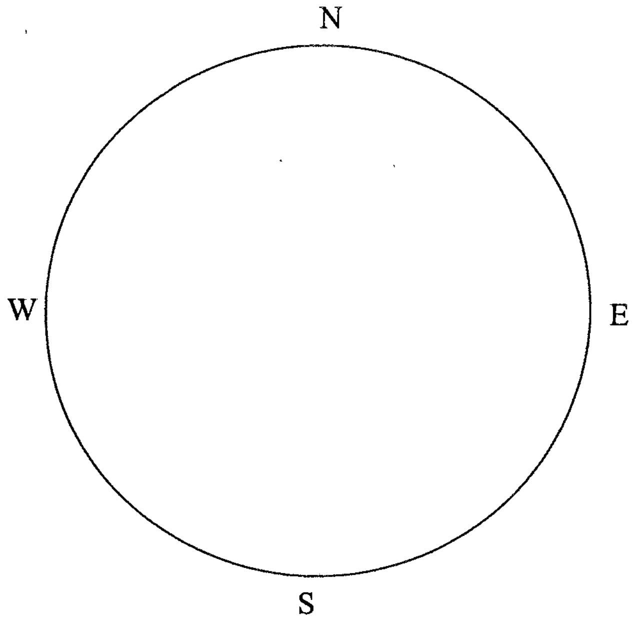
3 NYE [illegible] — Project Name

BUF [illegible] Lake Erie — Sample Point ID # & Name

5/11/12 — Date | 1140 — Start Time | 1150 — Stop Time | X coordinate, Y coordinate

[illegible] — Observer | 2-3 — Wind Spd. | W — Wind Dir. | 0 — Sky | 66 — Temp | Dominant (>50%) AES Habitat Type

Other Habitats



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes: [illegible]

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
[illegible]	[illegible]	S	75			1					
[illegible]	F	SE	25			11					
[illegible]	[illegible]	E	30	var	10	1111					
[illegible]	F, Fo	E	[illegible]	var	10	[illegible]					
[illegible]	F	var	[illegible]	var	10-50	[illegible]					
[illegible]	F	NW	350	S	10	1					
[illegible]	F	NW	400	N	10	11					
[illegible]	[illegible]	N	400-1KM	var	0-20	100+					colony?
DCCO	[illegible]	NW	250			[illegible]	30				
[illegible]	F/F	E	10	var	5	[illegible]	2				
[illegible]	F/Fo	N	750	var	0-20	[illegible]	→				colony?
[illegible]	F	E	20	S	10			1			
[illegible]	F	SE	[illegible]	S	15			11			

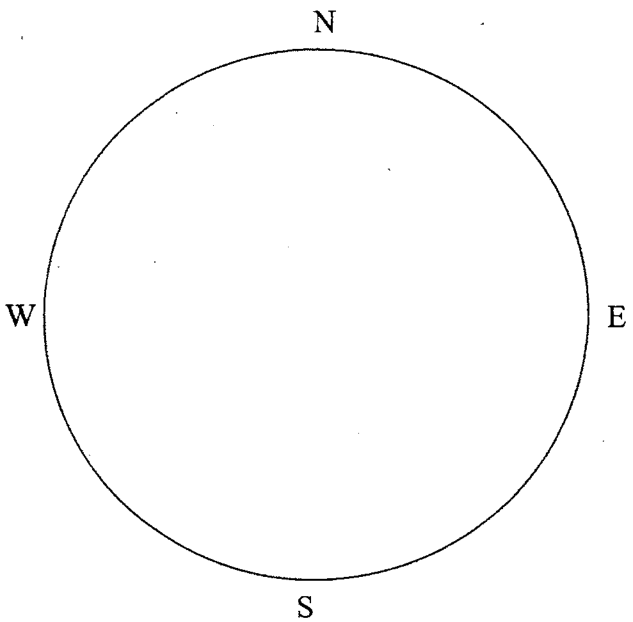
PASSERINE - Bird Point Count Data Sheet

BUF RIV	BUFF 101 - Fulton Blvd / Boat Slip
Project Name	Sample Point ID # & Name

6/5/12	9:42 am	9:47 am	
Date	Start Time	Stop Time	X coordinate, Y coordinate

NG	2	NE	1	59.3°F	
Observer	Wind Spd.	Wind Dir.	Sky	Temp	Dominant (>50%) AES Habitat Type

Other Habitats



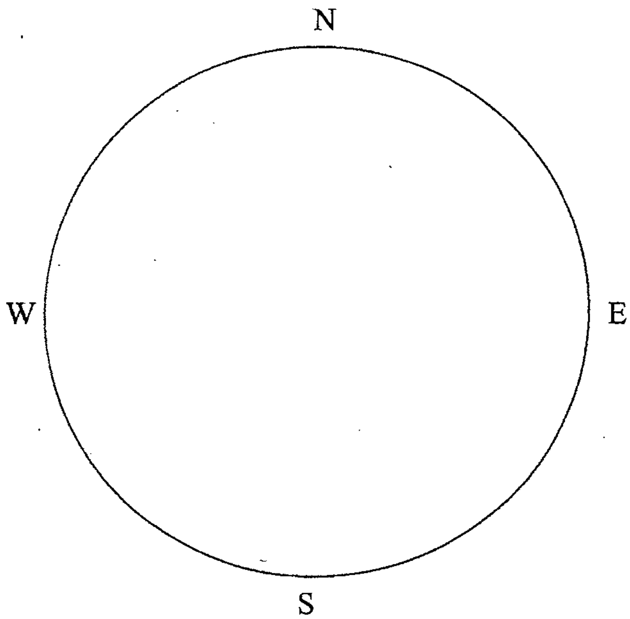
Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
CAGO	P	S	75m	—	0 m	~35					
CHSW	F/Fo	var	var	var	0m-5m	10+					
EUST	F	E	15m	N	10 m	15	III				
COTE	F	N/NW	500 m	var	var	50+					
YWAR	P	NE	100m	—	5 m	I					
RBGU	F	var	var	var	1-15m	100+					
SOSP	P	NE	75 m	—	3 m		I				
											* GBHE flying N on
											way in

PASSERINE - Bird Point Count Data Sheet

Project Name	BUFF ZIV
Sample Point ID # & Name	BVF 101
Date	6/15/12
Start Time	9:57am
Stop Time	10:02am
X coordinate, Y coordinate	
Observer	NG
Wind Spd.	2
Wind Dir.	S/SW
Sky	0
Temp	73.0°F
Dominant (>50%) AES Habitat Type	
Other Habitats	



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
KILL	P	SE	100m	–	0m	I					
SPSA	F/Fo	E/NE	50m	W	1m	III					
AMRO	P	SE	20m	–	0m	IIII					
RWBL	P	E	10m	–	0m	III					
CAGO	P	S	200m	–	0m	70+	30				N, 200m, perched on water
COTE	P/F	N/NW	500m	NE	0-5m	100+					
HEGU	P	SW	30m	–	0m	I	I				
NOCA	P	NE	70m	–	3m		I				
YWAR	P	NE	100m	–	5m		I				

PASSERINE - Bird Point Count Data Sheet

BUFF RIV
Project Name

BUFF 101 - Boat Slip
Sample Point ID # & Name

6/27/12
Date

9:56 am
Start Time

10:01 am
Stop Time

X coordinate, Y coordinate

NG
Observer

2
Wind Spd.

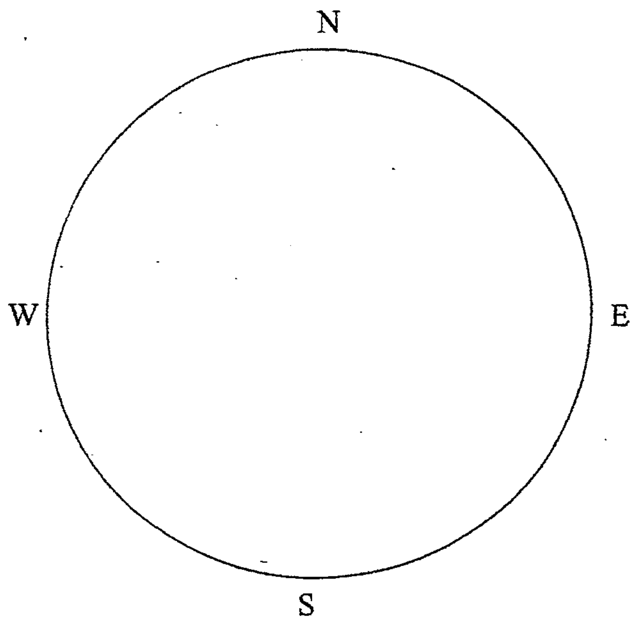
W/NW
Wind Dir.

3
Sky

71.2°F
Temp

Dominant (>50%) AES Habitat Type

Other Habitats



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

to the South

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
CHSW	P	E	15 m	—	1 m	10					
CAGO	P	N	150-500 m	—	0 m	~200 →	+75				
COTE	F	N/NW	400 m	-	2-15 m	~75					
RBGU	F/Fo	SE	10 m	var	5 m	III	IIII				
SAVS	P	NE, SE	60 m, 35 m	—	1 m	II					
SOSP	P	NE	65 m	—	1 m	I	I				
GBHE	F	SW	100 m	S	1 m		I				
EUST	F	NE	60 m	NW	5 m		IIII				
YWAR	P	NE	75 m	—	1 m		I				

PASSERINE - Bird Point Count Data Sheet

Project Name: BR BUF

Sample Point ID # & Name: BUF 101

Date: 8/24/12

Start Time: 1035

Stop Time: 1040

X coordinate, Y coordinate:

Observer: MJM

Wind Spd.: 2

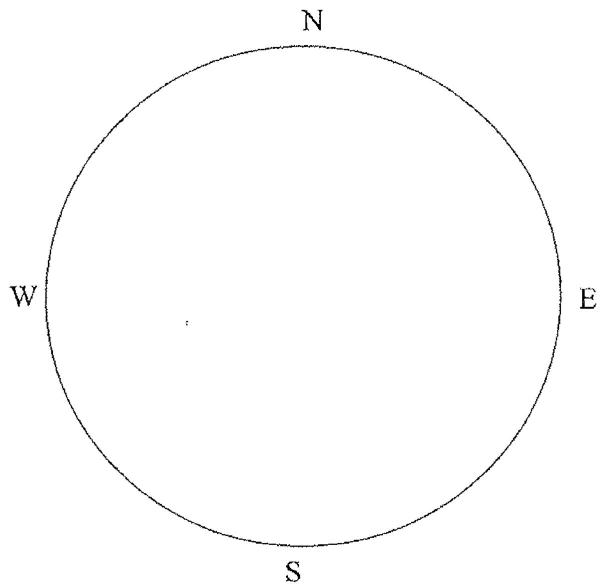
Wind Dir.: SSE

Sky: 5

Temp: 74

Dominant (>50%) AES Habitat Type:

Other Habitats:



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
FBGU	F	N	0-1500								
DCCO	~~F~~/P	NW	750	—		III					
HEGU	F	W	250	N	10	I					
AMCR	C	~~S~~ S	700	—	—	II					
SSSP	C	N	150	—	—		I				
AMGO	C	N	150	—	—		I				
COTE	F	NW	1000	var	25			IIII			
TRES	F	N	20	var/S	100m			≈25			
SAVS	P/C	SE	75					I			

PASSERINE - Bird Point Count Data Sheet

BUF [illegible] 11-05[illegible] — Project Name

BUF 102 [illegible] — Sample Point ID # & Name

11/[illegible] — Date

07[illegible] — Start Time

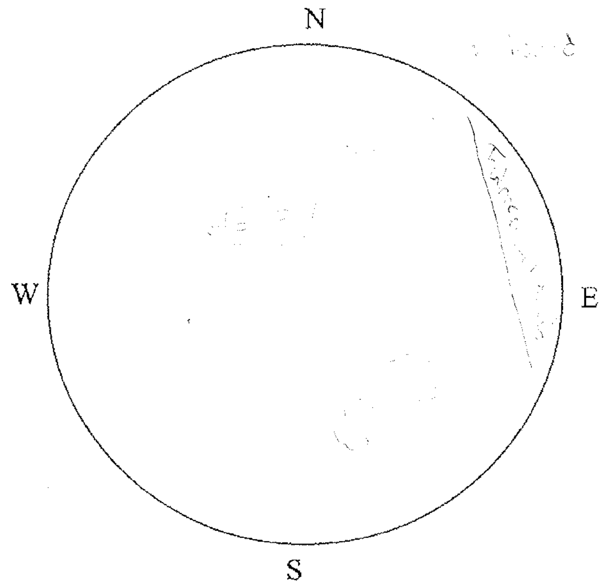
Stop Time

42.865296 , 78.877102 — X coordinate, Y coordinate

Observer | Wind Spd. | Wind Dir. | Sky | Temp

Dominant (>50%) AES Habitat Type

Other Habitats [illegible] / Developed



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
[illegible]		[illegible]	[illegible]								
											[illegible]
[illegible]						[illegible]					9
[illegible]							|||				3
[illegible]		[illegible]	[illegible]								[illegible]

[illegible]

PASSERINE - Bird Point Count Data Sheet

Project Name: BNR

Sample Point ID # & Name: BUF-102

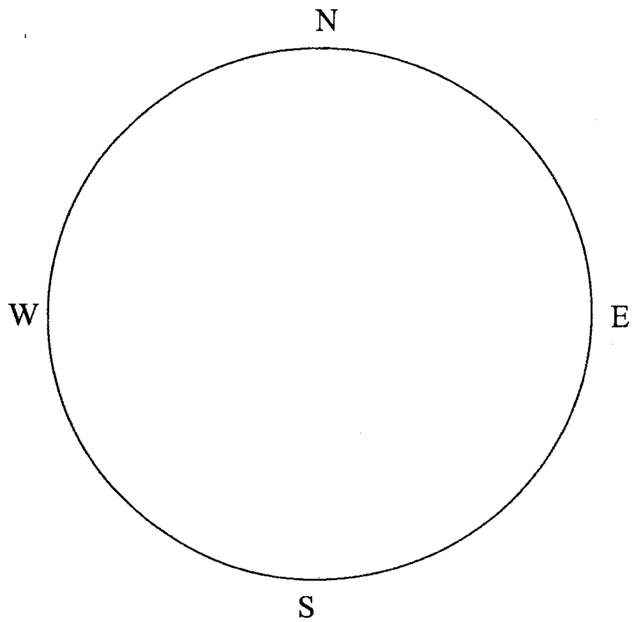
Date: 1/22/12 | Start Time: 0928 | Stop Time: 0938

X coordinate, Y coordinate:

Observer: mjm | Wind Spd.: 1 | Wind Dir.: E | Sky: 0 | Temp: 22

Dominant (>50%) AES Habitat Type:

Other Habitats:



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes: fox tracks in snow
– observed red fox!

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (~~ft~~ or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
HSGU	F	W	2KM	S	20.	7	10+*				*Beyond barrier wall
RBGU	F	W	KM	S	20	5					
[illegible]	F	S	750	S	50	9					
RoPi	F	E	750	N	50		150+				
COHA	F	E	750	var/N	50			1			Hunting ROPI [illegible]
RoPi	P	N	1KM+		/			500+			Perched [illegible] on Green Tower

PASSERINE - Bird Point Count Data Sheet

Project Name: Buf RIV 11-0543

Sample Point ID # & Name: BUFF 102

Date: 4/27/12

Start Time: 11:45am

Stop Time: 11:55am

X coordinate, Y coordinate: 42.865296, 78.877102

Observer: NG

Wind Spd.: 4.2mph

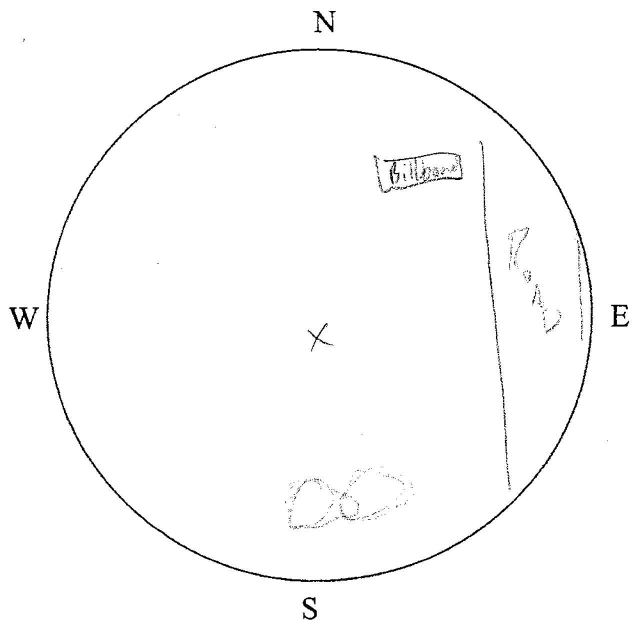
Wind Dir.:

Sky: 2

Temp: 43.5°F

Dominant (>50%) AES Habitat Type: Grassland

Other Habitats: open woodland / [illegible]



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
RWBL	P/F		var		var	II					
AMRO	F		var		var	I	IIII	I			
EUST	F							20+			flock
											Woodchuck

PASSERINE - Bird Point Count Data Sheet

BNR BUF AOC
Project Name

BUFF 102
Sample Point ID # & Name

5/10/12
Date

1243
Start Time

1253
Stop Time

X coordinate, Y coordinate

MM, NG
Observer

3
Wind Spd.

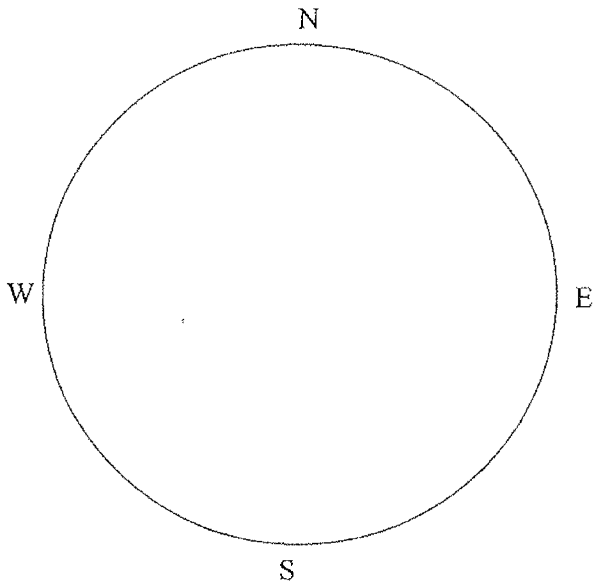
W
Wind Dir.

75%
Sky

55°
Temp

Dominant (>50%) AES Habitat Type

Other Habitats



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
RWBL	P	N	100			I					
AMRO	F	N	30	E	2	II					
AMGO	C	SE	75			I					
EUST	C/F	N	350	VAR	10	[illegible]					
ROPI	F	E	500	VAR	75		[illegible]				
NRWS	F	W	500	S	10		I				
CHSW	F	W	100	VAR	100		[illegible]				
RBGU	F	W	500	VAR/N	50			25+			
DCCO	F	W	400	N	10			9			

PASSERINE - Bird Point Count Data Sheet

BNR AUC SWS
Project Name

BNF 102 by Billboard
Sample Point ID # & Name

5/11/12
Date

1201
Start Time

1211
Stop Time

X coordinate, Y coordinate

Ajm
Observer

2
Wind Spd.

W
Wind Dir.

0
Sky

66
Temp

Dominant (>50%) AES Habitat Type

Other Habitats

N

W

E

S

Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes: Plowed cropland [illegible] [illegible] [illegible]

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
RWBL	P	E	50			II					
EUST	P	E	50			IIII I					on lines
EABO	P	E	50			II					
SOSP	C	W	100			I					
EUST	P	NW	150			IIII IIII					
KILL	C	W	200			I					
NOBL	C	N	250			I					
RBGU	F	W	750	var	0-20	30+					
COTE	F	W	750	N	30		I				
BARS	F	W	100	S	2		III				
NRWS	P	W	75				I				
ROPI	F	E	750	var	40			35			
SWSP	C	N	300					I			
SAVS	C	NW	250					I			
YWAR	C	SSW	500					I			
RBGU	F	NW	75	S	10			IIII II			
AMKE	F/AE	NE	100	var	70			I			

PASSERINE - Bird Point Count Data Sheet

Project Name: BUF RIV

Sample Point ID # & Name: BUF 102 - Fuhrman Blvd

Date: 6/5/12

Start Time: 9:28 am

Stop Time: 9:33 am

X coordinate, Y coordinate:

Observer: NG

Wind Spd.: 2

Wind Dir.: NE

Sky: 1

Temp: 57.6°F

Dominant (>50%) AES Habitat Type:

Other Habitats:

N

W

E

S

Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
RWBL	P/F	W/SW	10 m	—	1-5m	I~~IIII~~					
FOST	F	W/NW	25 m	N	5m	~~IIII~~					
BARS	Fo	W	15 m	NE	2 m	I					
SAVS	P	NW	35 m	—	1 m	II					
RBGU	F	var	var	var	var	II	15+				
											over lake by boardwalk

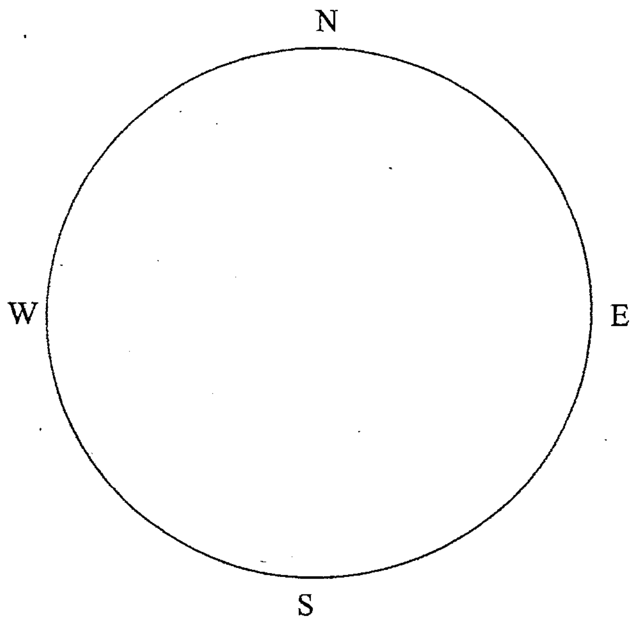
PASSERINE - Bird Point Count Data Sheet

BUFF TRV	BUFF 102 – Fillmore Blvd
Project Name	Sample Point ID # & Name

6/15/12	9:45am	9:50am	
Date	Start Time	Stop Time	X coordinate, Y coordinate

NG	2	S/SW	0	73.0°F	
Observer	Wind Spd.	Wind Dir.	Sky	Temp	Dominant (>50%) AES Habitat Type

Other Habitats ____________________



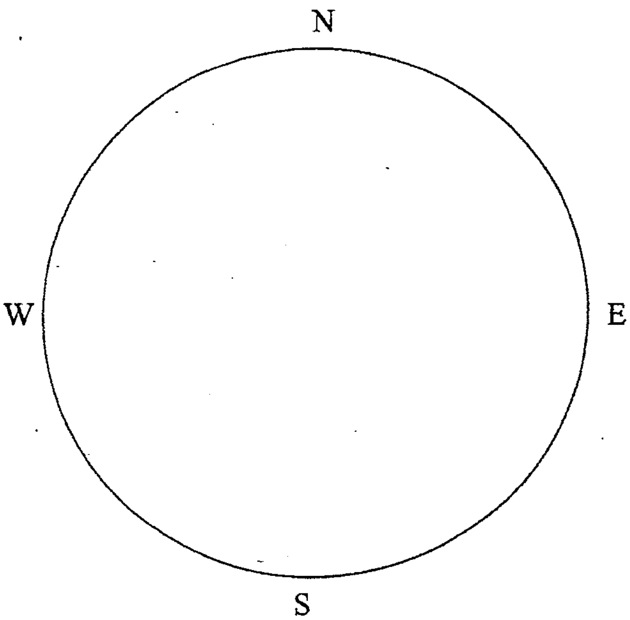
Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
SAVS	P	N/NW	35m	–	1m	II	I				
RWBL	P	E	25m	–	1m	III					
TRSW	Fo	W	20-30m	V	2-3m	III					
EUST	P/F	W	15m	N/S	5-10m	~~IIII~~	+16				
AMRO	P	W	20m	–	5m	I					

PASSERINE - Bird Point Count Data Sheet

Project Name: BUFF RIV	Sample Point ID # & Name: BUFF 102 - Fuhrman Blvd
Date: 6/27/12	Start Time: 9:42 am
Stop Time: 9:47 am	X coordinate, Y coordinate:
Observer: NG	Wind Spd.: 3
Wind Dir.: W/NW	Sky: 2
Temp: 71°F	Dominant (>50%) AES Habitat Type:
Other Habitats:	



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
KILL	P	S/SW	50m	—	0m	I					
SAVS	P	W/NW	20,50m	—	0m	III					
RWBL	P	W,N,E	var	—	0-1m	IIII	I				
AMRO	P	NE	35m	—	5m	IIII					
Unknown Gulls	F	W	100m	N/S	5-10m	~15					
BARS	Fo	W	20m	N/W	1m		II				

PASSERINE - Bird Point Count Data Sheet

CBR BUF
Project Name

BUF 102'
Sample Point ID # & Name

8/24/12
Date

1110
Start Time

1115
Stop Time

X coordinate, Y coordinate

[illegible]
Observer

1-2
Wind Spd.

S
Wind Dir.

0
Sky

75°
Temp

Dominant (>50%) AES Habitat Type

Other Habitats

N

W E

S

Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
SOSP	C/P					1					
AMGO	C/F					1					
AMCR	C/F					11					
EUST	F					6					
RSPI	F					32					
COHA	F/Fo					1					
RBGU	F					III	~~IIII~~ IIII	~~IIII~~			
DCCO	F					16	10				
YWAR	P						1				
CHSP	P						1				
FISP	C						1				
SAVS	P/Fo						11				

PASSERINE - Bird Point Count Data Sheet

[illegible] 11-[illegible]
Project Name

[illegible] Shy (Anad)[illegible]
Sample Point ID # & Name

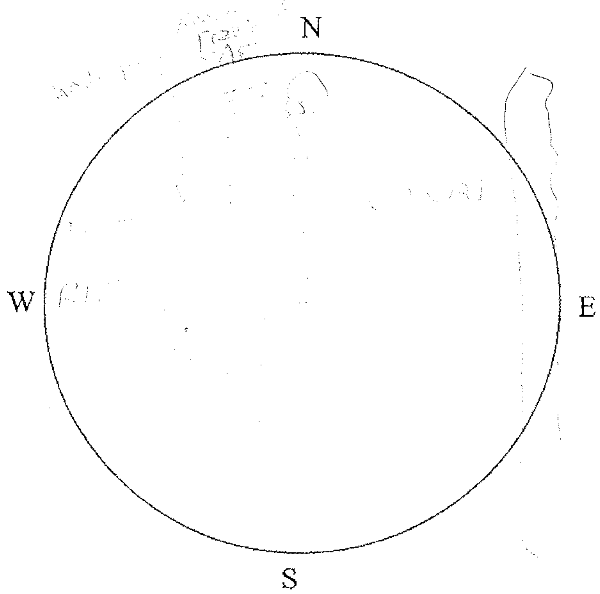
11/[illegible] | 0752 | [illegible]
Date | Start Time | Stop Time

42.859310 , 78.869415
X coordinate, Y coordinate

[illegible] | 5-10 | [illegible] | 10% | 33°
Observer | Wind Spd. | Wind Dir. | Sky | Temp

[illegible]
Dominant (>50%) AES Habitat Type

Other Habitats Barren/[illegible]



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
[illegible]			[illegible]			[illegible]					
[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	40+					flocks
[illegible]	[illegible]		[illegible]	NE	25			///			
[illegible]	[illegible]		[illegible]					/			
[illegible]	[illegible]			VAR	10m						

PASSERINE - Bird Point Count Data Sheet

BARLB RAOC 11-0345
Project Name

BUF 163 - City Strip Canal
Sample Point ID # & Name

Nov 2012
Date

0948
Start Time

0958
Stop Time

X coordinate, Y coordinate

mpr
Observer

1
Wind Spd.

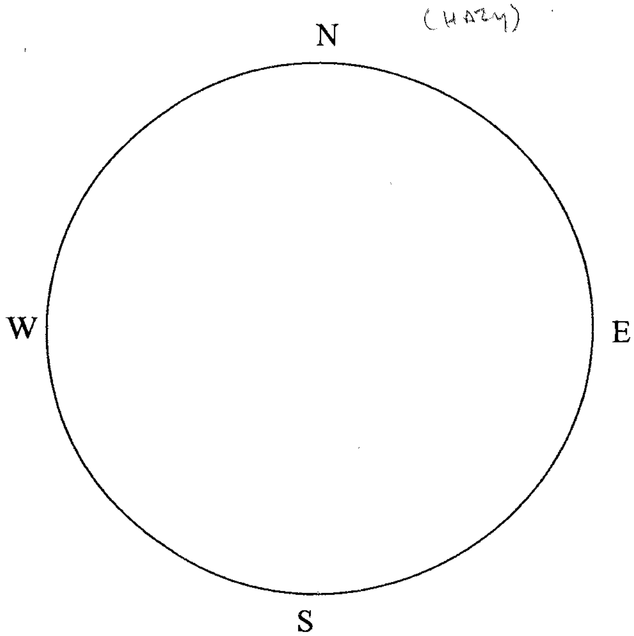
E
Wind Dir.

2
Sky
(HAZY)

22
Temp

Dominant (>50%) AES Habitat Type

Other Habitats



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes: WT deer tracks
red fox tracks
canal is frozen

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
SNBU	F	W	20	S	75m		OK 1				Flyover

PASSERINE - Bird Point Count Data Sheet

BUF RIV 11-0543
Project Name

BUFF 103 - Ship Canal
Sample Point ID # & Name

4/27/12
Date

11:25 am
Start Time

11:35 am
Stop Time

42.859310, 78.869415
X coordinate, Y coordinate

NG
Observer

4.4mph
Wind Spd.

Wind Dir.

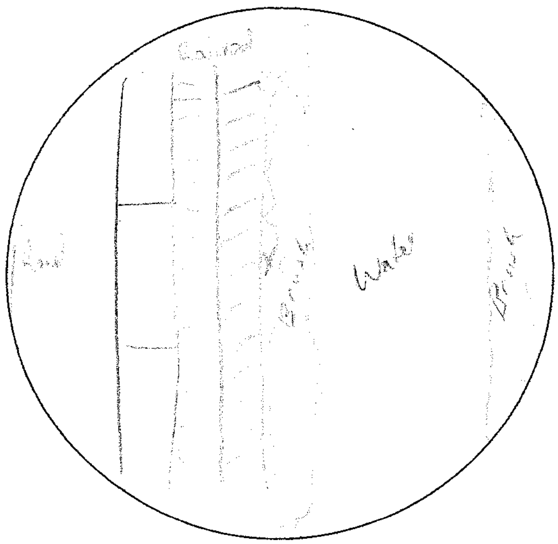
3
Sky

44.1°F
Temp

Open Water
Dominant (>50%) AES Habitat Type

Other Habitats Barren / Hedgerow

N

W  E

S

Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
CATE	F/Fo		Var		Var	II					TERN - orange bill, black cap
DCCO	F		Var		Var	I					cormorant - all dark
CAGO	P		Var		Var	I		I			
RBGU	F/Fo		Var		Var	I	IIII	II			
MODO	F		Var		Var		II				
RWBL	F/P		Var		Var	I	I	II			
SEPL	F/Fo		Var		Var			I			See back semipalmated plover
BEKI	F		Var		Var			I			
BARS	F/Fo		Var		Var			IIII			swallow, brown back / Barn swallow

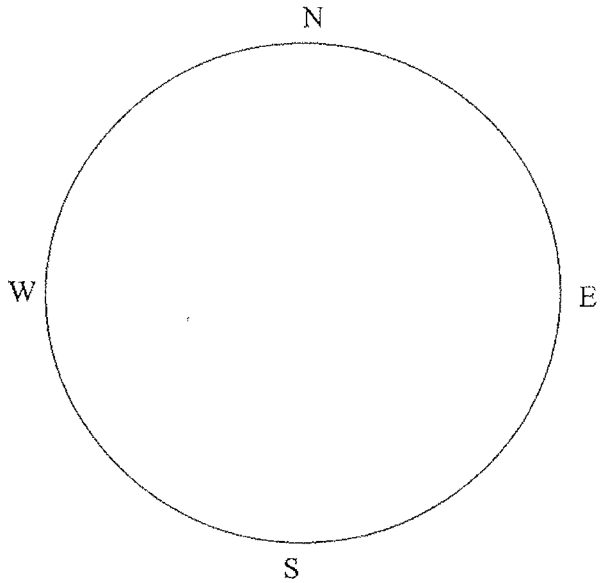
PASSERINE - Bird Point Count Data Sheet

BNR B[illegible] ADC	BUFF 103
Project Name	Sample Point ID # & Name

5/10/12	1145	1155	
Date	Start Time	Stop Time	X coordinate, Y coordinate

NG/MM	1-2	N/NW	1	52°F	
Observer	Wind Spd.	Wind Dir.	Sky	Temp	Dominant (>50%) AES Habitat Type

Other Habitats



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes: woodchuck
muskrat
snake (dead)
18"

large [illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
RWBL	T					‖					
YWAR	C/P	E	15			1					
[illegible]	C					1					
KILL	F					1					
GRCA	P	E	75			1					
KILL	C					1					
CAGO	P	E	10			~~||||~~					2 adult 5 gosling
SOSP		[illegible]	75			1					
[illegible]	C	NE	125			1					
RWBL	C	N	100				1				
RBGU	F	N	20	W	10		|||	‖			
ROPI	F	NE	500	var	25		20+				
BARS	F/Fo	E	10	var	10		|||				
COGR	C	N	75					1			
TUVU	F	N	500	var	200		[illegible]		‖		
RWBL	F	NE	300	N	20		1				

PASSERINE - Bird Point Count Data Sheet

Project Name: BUR [illegible] WS
Sample Point ID # & Name: BUF [illegible] Ship Canal
Date: 5/11/12
Start Time: 1220
Stop Time: 1230
X coordinate, Y coordinate:
Observer: [illegible]
Wind Spd.: 0
Wind Dir.: -
Sky: 0
Temp: 69°
Dominant (>50%) AES Habitat Type:
Other Habitats:

N

W

E

S

Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes: Many [illegible]
[illegible] ( )
[illegible] (1)
[illegible] (1)
[illegible] (1)

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
HOSP	C	W	30			I					
RBGU	F	var	var	var	20	III					
[illegible]	C	S	5			I					
BHCO	C	S	30			I					
[illegible]	C	S	10			I					
[illegible]	P	S	15			I					[illegible]
CAGO	P	N	500			II	IIII				
[illegible]	F	var	var	var	10		IIII				
[illegible]	P	SE	25				I				
[illegible]	P	S	40				III				
[illegible]	P	N	500				I				
SOSP	Fo	N	40					I			
[illegible]	Fo	N	10	var	5			II			
[illegible]	F	N	20	NW	5			III			
MODO	P	SSE	75					I			
[illegible]	[illegible]	[illegible]	[illegible]					I			
[illegible]	[illegible]	E	50					I			
[illegible]	[illegible]	[illegible]	100					I			
[illegible]	C	E	50					I			

PASSERINE - Bird Point Count Data Sheet

Project Name: BUF RIV

Sample Point ID # & Name: BUFF 103 - Ship Canal

Date: 6/5/12

Start Time: 9:16 am

Stop Time: 9:21 am

X coordinate, Y coordinate:

Observer: NG

Wind Spd.: 2

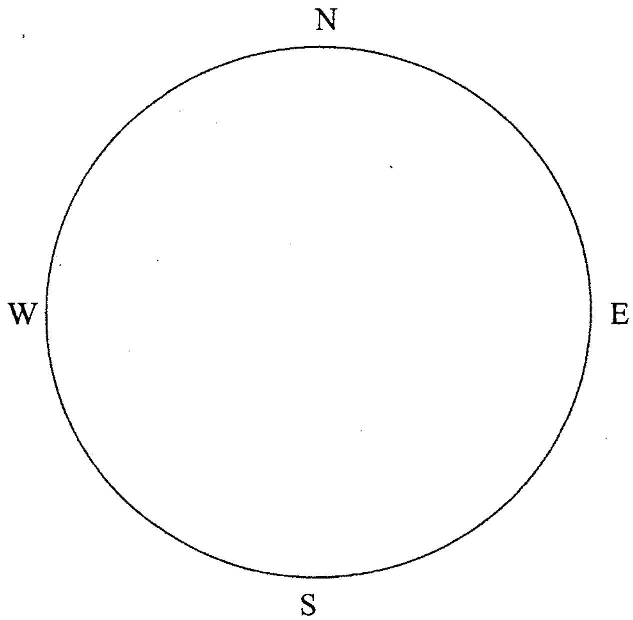
Wind Dir.: NE

Sky: 1

Temp: 58.2°F

Dominant (>50%) AES Habitat Type:

Other Habitats:



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
RWBL	P/F	N	5m	Var	[illegible]	~~IIII~~ I					
RBGU	P	S	60m	—	0m	I					
KILL	P/Fo	SW	20m	—	0m	I					
YWAR	P	NE	50m	—	1m	I	I				
SOSP	P	E/NE	45m	—	1m	II	II				
BAOR	P	N	5m	—	1m		I				
EUST	P/F	Var	Var	Var	0-5m		III				

PASSERINE - Bird Point Count Data Sheet

BVFF RIV
Project Name

BUFF 103 - Ship Canal
Sample Point ID # & Name

6/15/12
Date

9:33 am
Start Time

9:38 am
Stop Time

X coordinate, Y coordinate

NG
Observer

2
Wind Spd.

S/SW
Wind Dir.

0
Sky

72.5°F
Temp

Dominant (>50%) AES Habitat Type

Other Habitats

N

W

E

S

Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
RWBL	P	N/E	5-35m	—	0m	~~IIII~~					
SOSP	P	E	40m	—	1m	II	I				
AMRO	P	E	35m	—	2m	I					
RBGU	F	E	var	N	45m	II					
YWAR	P	E	40m	—	2m		I				
EUST	F/P	E	45m	S	3m		~~IIII~~				
											*mowing along
											Fuhrman Blvd, hard
											to hear

PASSERINE - Bird Point Count Data Sheet

BUFF RIV
Project Name

BUFF 103 – Ship Canal
Sample Point ID # & Name

6/27/12
Date

9:31am
Start Time

9:36am
Stop Time

X coordinate, Y coordinate

NG
Observer

2
Wind Spd.

W/NW
Wind Dir.

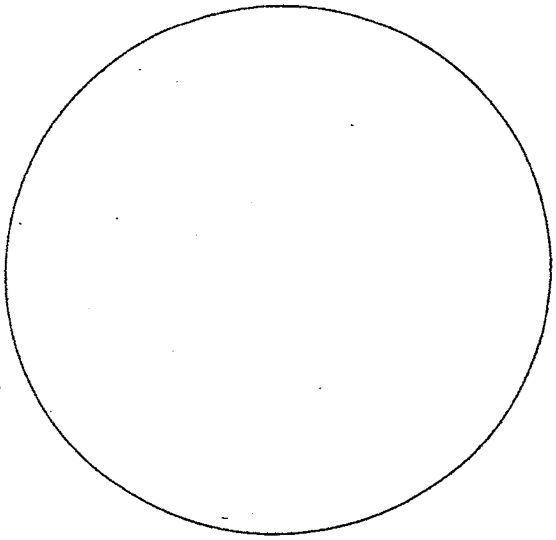
2
Sky

71°F
Temp

Dominant (>50%) AES Habitat Type

Other Habitats

N



W E

S

Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
RWBL	F	E	10m	N/NE	2m	III	I				
SOSP	P	N	5m	—	1m	I					
AMGO	F	N	5m	E	3m	I					
RBGU	F	E	15m	N	5m	~~IIII~~I	II				
SPSA	F/P/Fo	E	5m	N	1m	I					
WIFL	P	E/SE	35m	—	2m	I					
CHSW	Fo	E	var	N/S	1-3m	I	II				
AMCR	F	N/E	var	W	10m		I				
EUST	F/P	SE	100m	var	5m		IIII				

PASSERINE - Bird Point Count Data Sheet

LBR BUF — Project Name

DUF 103 — Sample Point ID # & Name

8/24/12 — Date

1012 — Start Time

1017 — Stop Time

X coordinate, Y coordinate

Mgm — Observer

Wind Spd.

S — Wind Dir

0 — Sky

72 — Temp

Dominant (>50%) AES Habitat Type

Other Habitats

N

W E

S

Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

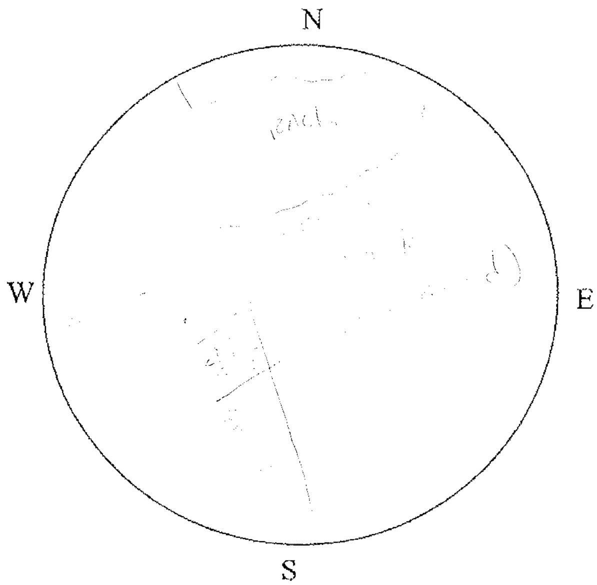
Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
MALL											
GBHE											
RBGU											
SOSA											
KILL											
YWAR											
MAWA											
PAWA											
ROPI											
[illegible]RTHA											
TUVU											
RWBL											
DCRS											
WIFL											
SPSA											
CHSW											
EUST											
AMCR											
AMRO											
SOSP											

PASSERINE - Bird Point Count Data Sheet

Project Name: [illegible]	Sample Point ID # & Name: BUF 104 - [illegible] Public Fishing Access
Date: 11/2[illegible]	Start Time: 0812
Stop Time: 0822	X coordinate, Y coordinate: 78.868412, 42.866223
Observer: [illegible]	Wind Spd.: 0-5
Wind Dir.: N[illegible]	Sky: [illegible]
Temp: [illegible]	Dominant (>50%) AES Habitat Type: Riparian Woodland

Other Habitats: Open Water/ [illegible]



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1					
[illegible]		[illegible]	[illegible]			[illegible]					
[illegible]											

PASSERINE - Bird Point Count Data Sheet

BNR LPE ABC [illegible] — Project Name

BUF 104 1st Ward Church PK — Sample Point ID # & Name

1/22/12 — Date

1003 — Start Time

Stop Time

X coordinate, Y coordinate

mm — Observer

0-1 — Wind Spd.

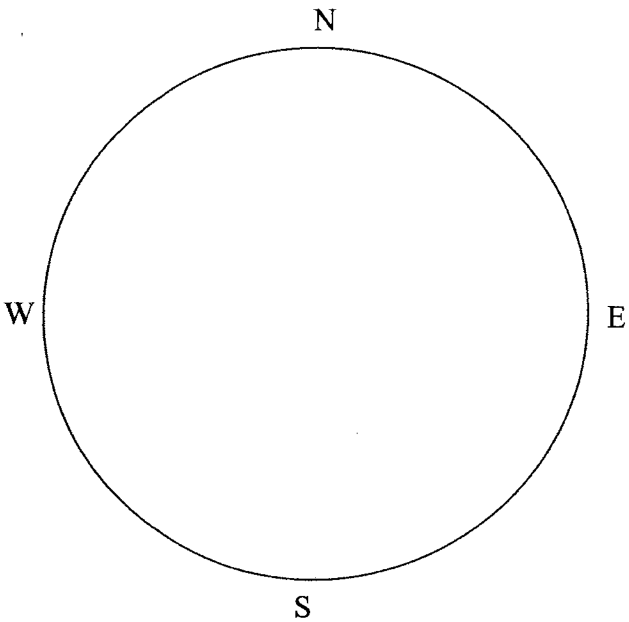
S — Wind Dir.

0 — Sky

25 — Temp

Dominant (>50%) AES Habitat Type

Other Habitats



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes: wT deer rubs on pines claws

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
AMCR	P	SS	250			I					
EUST	P	E	200			IIIII					feeding in dark pkg lot
HOSP	P	[illegible]	[illegible]			IIIIIIIII					"
AMCR	F	NS	150	N	25		I				

PASSERINE - Bird Point Count Data Sheet

Buff RIV 11-0543
Project Name

BUFF 104 - Ohio St Public Fishing
Sample Point ID # & Name

4/27/12
Date

11:07 am
Start Time

11:17 am
Stop Time

78.868412, 42.866223
X coordinate, Y coordinate

NG
Observer

4.2 mph
Wind Spd.

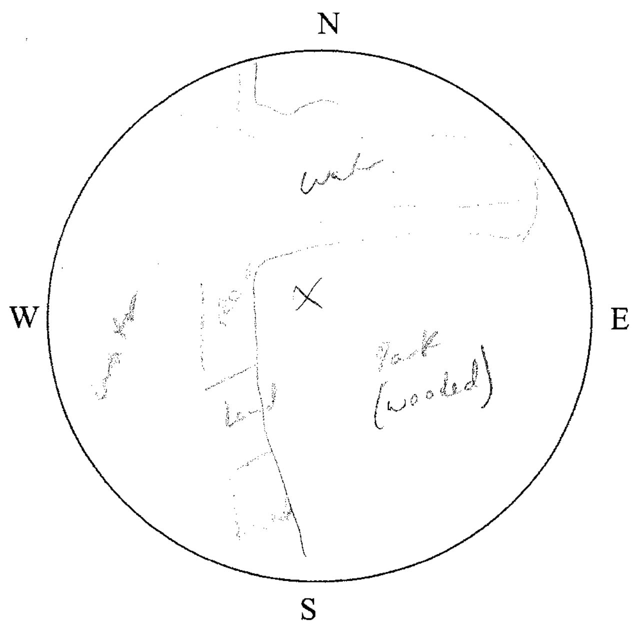
Wind Dir.

3
Sky

44.3 F
Temp

Riparian Woodland
Dominant (>50%) AES Habitat Type

Other Habitats Open Water / Developed



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

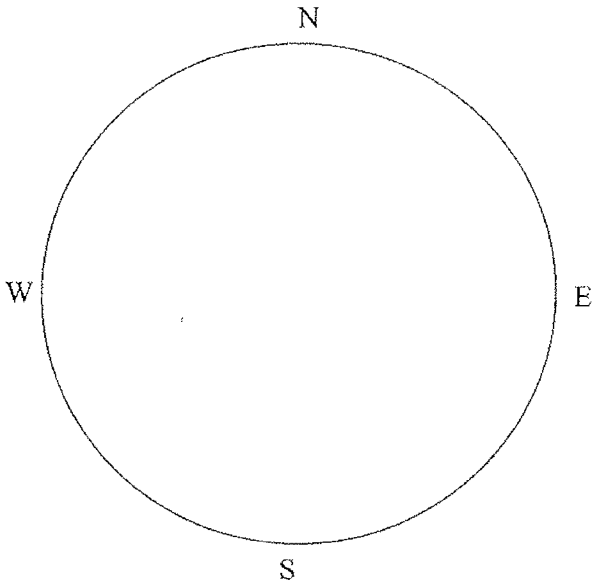
Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
MALL	P		Var		0m	1		111			
CAGO	P		Var		0m	1	1				
	F		Var		var	1111					Unknown Gulls
BLJA	F		Var		Var		1				
ROPO	F		Var		var		15+				flock

PASSERINE - Bird Point Count Data Sheet

Project Name:	Sample Point ID # & Name: BUFF 104
Date: 6/12/12	Start Time: 11:12 am
Stop Time: 11:22 am	X coordinate, Y coordinate:
Observer: NG/MA	Wind Spd.: 2
Wind Dir.: N/NW	Sky: 1
Temp: 53°F	Dominant (>50%) AES Habitat Type:

Other Habitats



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

w/ 9 goslings w/ 4 gosling

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
EVST	P	N	var	—	var	IIII		IIII			
YWAR	P/C	E	30m	—	2m	I					
AMRO	P	S	35m	—	—	I					
AMCR	P			—		I					
SPSA	P/C	N	45m	—	0m	III					
CAGO	P	NW	40m	—		I	II II				
RBGU	F	var			20m	II					
TRES	F/F	S	1000m	SW	40m	~~IIII~~					
RODO	F	S	200m	SW	50m		II				
SOSP	P/C	W	25m	—	1m		I	I			
AMGO	P/C	E	10m	—	5m			I			

PASSERINE - Bird Point Count Data Sheet

BNR
Project Name

BUF 164 Ohio St. Boat Launch
Sample Point ID # & Name

5/11/12
Date

0552
Start Time

0602
Stop Time

X coordinate, Y coordinate

MM
Observer

3
Wind Spd.

WNW
Wind Dir.

3/1
Sky

44°
Temp

Dominant (>50%) AES Habitat Type

Other Habitats

N

W

E

S

Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
TRES	Fo/CN	NE	50	var	5-20	II					nesting in snag by pkg lot
COGR	F	NE	100			I					
YWAR	C	E	150			III					
EUST	Fo/P	S	10	var	20	12					
AMCR	C	N	20			II					
RBGU	F	S	20	var	10-25	12					
SOSP	C	NW	175				I				
MALL	F	SW	200	N	3m		I				
CAGO	P/Fo	SE	75	N	3m		9				3 gosling
AMRO	Fo/P	N	20				IIII				
AMGO	C	E	50				I	I			
CHSW	Fo	SSE	75	var	25			卌 II			
SPSA	Fo	NW	100					I			
WTSP	C	N	200						I		

PASSERINE - Bird Point Count Data Sheet

BUFF R/V
Project Name

BUFF 104 – Ohio St
Sample Point ID # & Name

6/5/12
Date

8:53 am
Start Time

8:58
Stop Time

X coordinate, Y coordinate

NG
Observer

2
Wind Spd.

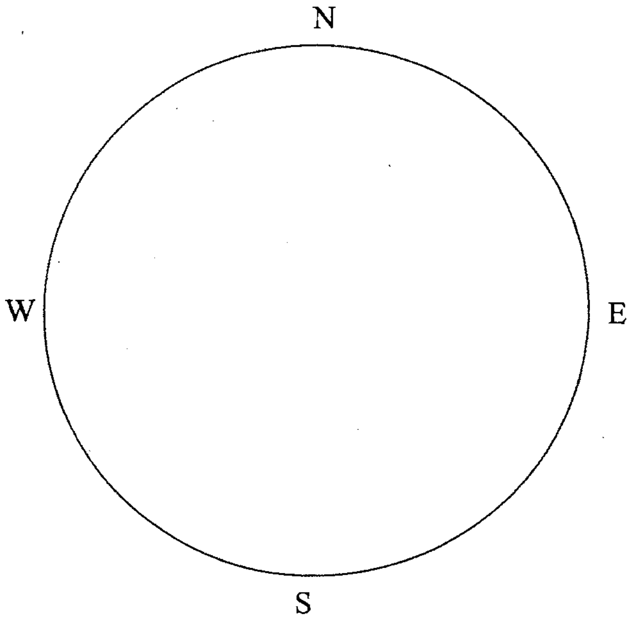
NE
Wind Dir.

1
Sky

58.1°F
Temp

Dominant (>50%) AES Habitat Type

Other Habitats



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
AMGO	P	NE	10 m	—	1 m	I					
CAGO	P	N/NE	55 m	—	0 m	I					
AMRO	P/Fo	S/SE	var	—	0 m	III					
YWAR	P	E	30 m	—	3 m	I					
SOSP	P	W/NW	50 m	—	1 m	I					
BARS	Fo	var	var	SW	2-3 m	II					
NOCA	P	S/SW	20 m	—	5 m		I				
RBGU	F	var	var	var	var	II	III				
HOSP	P/Fo	E/NE	30 m	—	0 m		II				

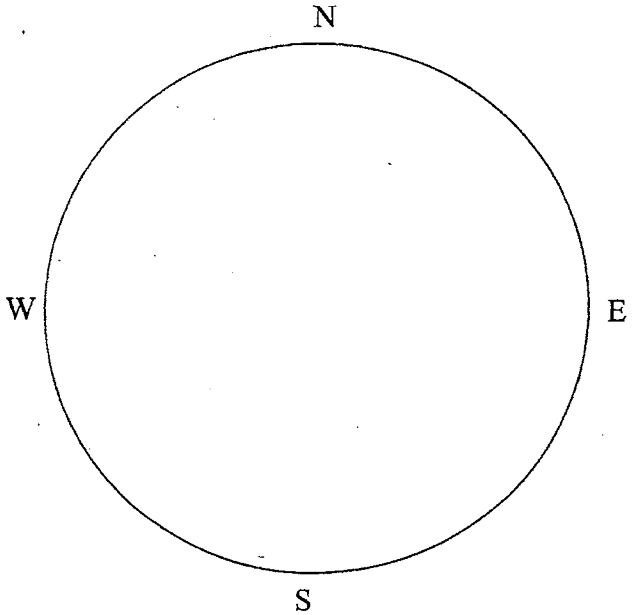
PASSERINE - Bird Point Count Data Sheet

BUFF RIV	BUFF 104 - Ohio St
Project Name	Sample Point ID # & Name

6/15/12	9:07 am	9:12 am	
Date	Start Time	Stop Time	X coordinate, Y coordinate

NG	1	S/SW	0	72.3°F	
Observer	Wind Spd.	Wind Dir.	Sky	Temp	Dominant (>50%) AES Habitat Type

Other Habitats ____________________



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
SOSP	P	Var	5-35m	—	1m	III					
MALL	P	N	30m	—	0m	I					
AMRO	P	SE	15m	—	1m	I					
EUST	F	W	10m	NE	5m	II					
YWAR	P	N/NE	10m	—	10m	II					
AMGO	F	S/SE	15m	NW	5m		1				
RBGU	P	W/SW	100m	—	0m		1				
RODO	F	W/SW	150m	NE	30m		1				
GBHE	F	NW	200m	E	70m		1				

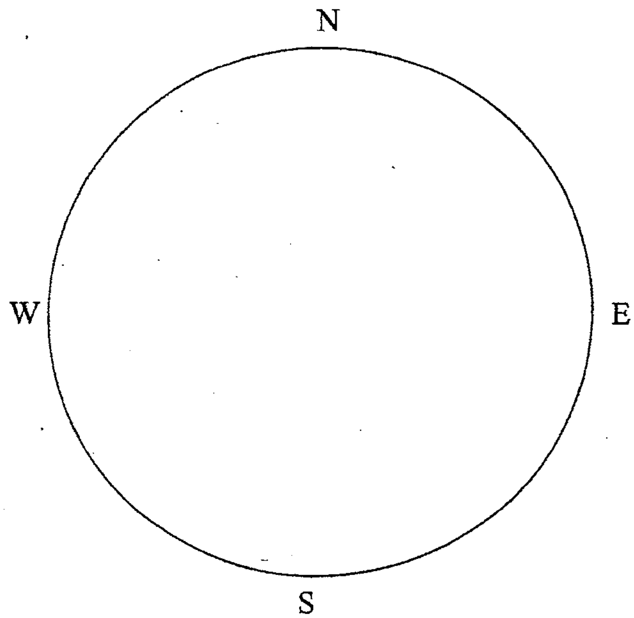
PASSERINE - Bird Point Count Data Sheet

Project Name: BUFF RIV
Sample Point ID # & Name: BUFF 104 - Ohio St

Date: 6/27/12
Start Time: 9:05 am
Stop Time: 9:10 am
X coordinate, Y coordinate:

Observer: NG
Wind Spd.: 3
Wind Dir.: W/NW
Sky: 1
Temp: 68.3°F
Dominant (>50%) AES Habitat Type:

Other Habitats:



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
AMRO	F	W	25 m	SW	3m	||					
SOSP	P	NW+NE	30-5 m	–	2m	||	|				
RBGU	F	W	40 m	N	5 m	||	|||				
EUST	P	W/SW	40-75 m	–	5 m	||||					
MALL	P	W/SW	35m	–	0 m	||					
RODO	F	W	70 m	N	15m		||				

PASSERINE - Bird Point Count Data Sheet

LBR
Project Name

BLF 104
Sample Point ID # & Name

8/24/12
Date

1000
Start Time

1005
Stop Time

X coordinate, Y coordinate

Observer

Wind Spd.

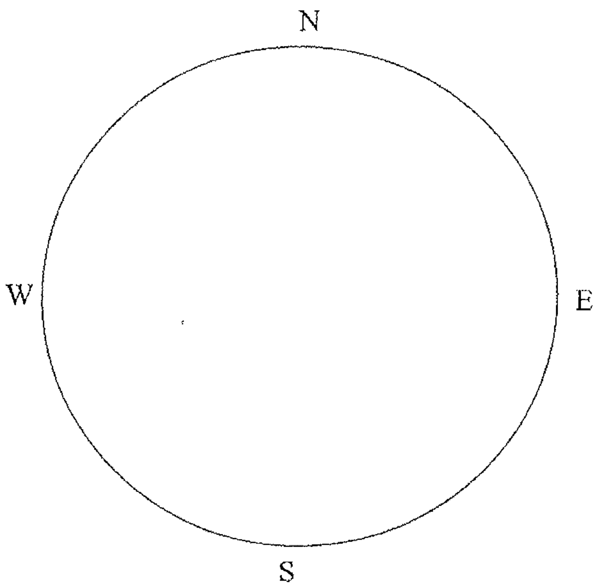
S
Wind Dir.

0
Sky

70
Temp

Dominant (>50%) AES Habitat Type

Other Habitats



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
CAGO						6					
SOSP						1					
HOSP						|||| |					
EUST						||					
ROPI						6					
RBGU											23
AMGO							|||				
MALL							||				

PASSERINE - Bird Point Count Data Sheet

[illegible]
Project Name

BUF 105 - [illegible]
Sample Point ID # & Name

[illegible]
Date

[illegible]
Start Time

0842
Stop Time

78.869631 , 42.871482
X coordinate, Y coordinate

[illegible]
Observer

0 - 5
Wind Spd.

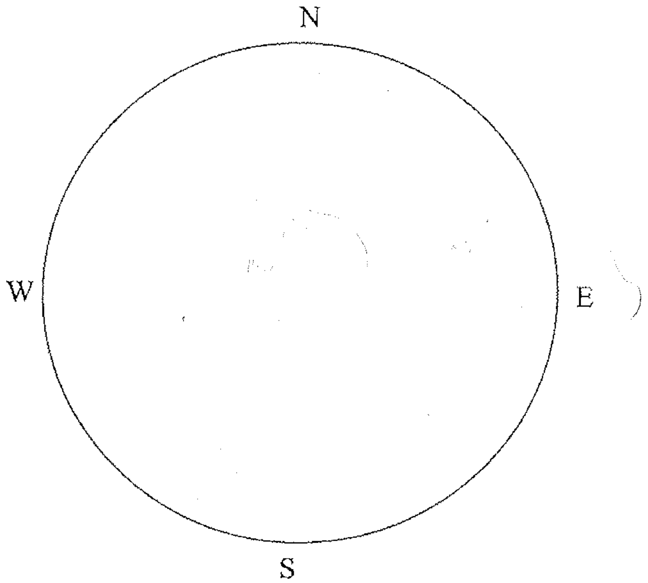
NE
Wind Dir.

5
Sky

38
Temp

[illegible] ([illegible])
Dominant (>50%) AES Habitat Type

Other Habitats [illegible] / [illegible]



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
[illegible]	F	[illegible]	5	[illegible]	[illegible]	2			1		
[illegible]	[illegible]			NW	18	1+					
[illegible]							4				
[illegible]	F	[illegible]	[illegible]	[illegible]	[illegible]			5	10?		
[illegible]	[illegible]							[illegible]			
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]					1		

PASSERINE - Bird Point Count Data Sheet

BMR LAF 20C
Project Name

BuF 105 (Moore + Mizmi LOT)
Sample Point ID # & Name

1/22/12
Date

1016
Start Time

1026
Stop Time

X coordinate, Y coordinate

mp
Observer

1
Wind Spd.

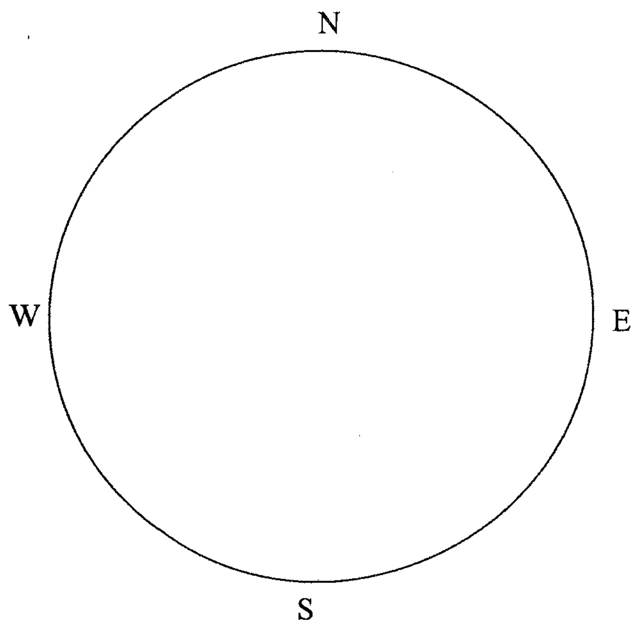
E
Wind Dir.

0
Sky

25
Temp

Dominant (>50%) AES Habitat Type

Other Habitats



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes: cottontail rabbit tracks

* do scavenger traps here

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
ROPI	F	E	75	NW	30	II (2)					
HAWK	F	S	500+	?	?	II+ (2+)					calling
EUST	P/F	S	500	W	20		I				
COHA	Fo/F	S	500	W	20		I				in pursuit of EUST
DOWO	P/C	E	25				I				

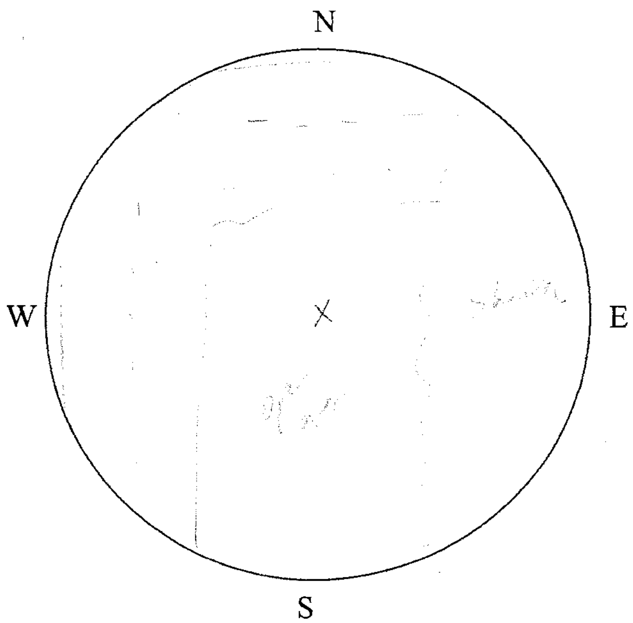
PASSERINE - Bird Point Count Data Sheet

BUF RIV 11-0543	BUFF 105
Project Name	Sample Point ID # & Name

4/27/12	12:20 PM	12:30 PM	78.869631, 42.871482
Date	Start Time	Stop Time	X coordinate, Y coordinate

NA	3.8mph		2	44.2°F	Abandoned lot (Shrubby / Field)
Observer	Wind Spd.	Wind Dir.	Sky	Temp	Dominant (>50%) AES Habitat Type

Other Habitats Barren / Developed



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
CAGO	P		var		0 m	II					
AMRO	P/Fo		var		var	I		II			
RWBL	P/F		var		var	I	II	I			
EUST	P/F		var		var		IIII				
BLJA	P		20 m		2 m			I			
RBGU	F/Fo		var		var	II	I	I			
COGR	P/F		var		var		~~IIII~~ I				
SOSP	P		25 m		4 m		I				

PASSERINE - Bird Point Count Data Sheet

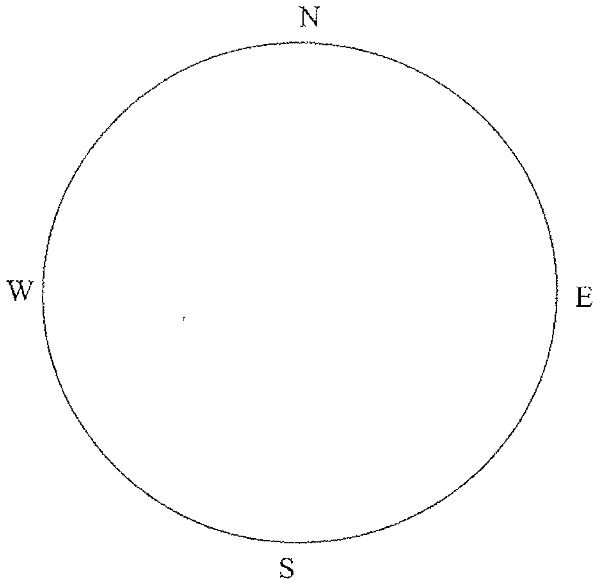
Project Name: ______ Sample Point ID # & Name: BUFF 105

Date: ______ Start Time: 11:25 am Stop Time: 11:35 am X coordinate, Y coordinate: ______

Observer: NG/MM Wind Spd.: 1-2 Wind Dir: N/NW Sky: 1 Temp: 54°F

Dominant (>50%) AES Habitat Type: ______

Other Habitats: ______



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
AMGO	P/F/C	var	var	—	var	III		I			
BARS	F					II		II			
YEWA	P/C		15m		2m	II		I			
AMRO	P/Fo	E						I			
NRSW	P/Fo	SE	200m	var	var	I					
NOCA	Fo	E	20m	—	0m		I				
RWBL	F	S	75m	—	—		II				
SOSP	P/C	E	30m	—	1m			I			
GRCA	P	NE	10m	—	3m			I			
CHSW	F/Fo	S/SE	var	S/SE	60m			I			

PASSERINE - Bird Point Count Data Sheet

BMP BAY — Project Name

DWP 105 Miami St — Sample Point ID # & Name

5/11/12 — Date

[illegible] — Start Time

[illegible] — Stop Time

X coordinate, Y coordinate

[illegible] — Observer

[illegible] — Wind Spd.

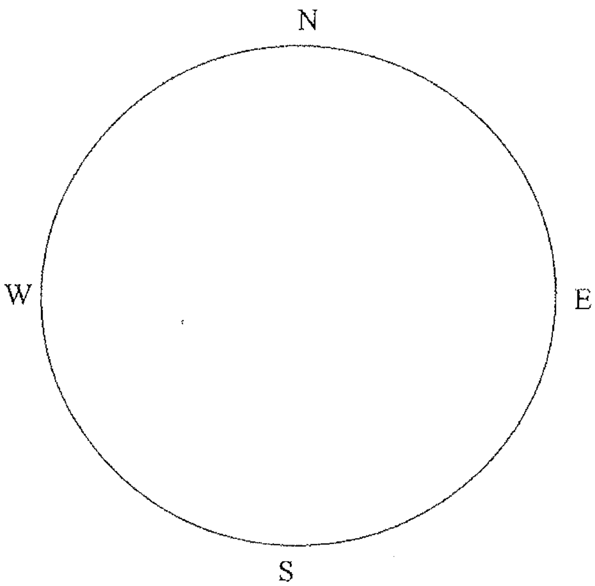
— — Wind Dir.

[illegible] — Sky

[illegible] — Temp

Dominant (>50%) AES Habitat Type

Other Habitats



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
YWSR	C	N	25			II					
CSWA	C	NNE	30			II					
YEWA	C	N	25			III					
NAWA	C	NNE	70			I					
AMGO	C	NNE	20								
CHSP	C	NW	50								
YWAR	C	W	5				I				
YWAR	C	W	5				I				
[illegible]	F	NE	50	S	3m		I				
[illegible]	C	NNE	300				I				
[illegible]	[illegible]	N	20					I			
[illegible]	[illegible]	[illegible]	[illegible]					II			[illegible]
SOSP	C	N	10					I			
DOWO	C	N	70					I			
[illegible]		S	500	N	75			[illegible]			
[illegible]		S	750	[illegible]	[illegible]			26			

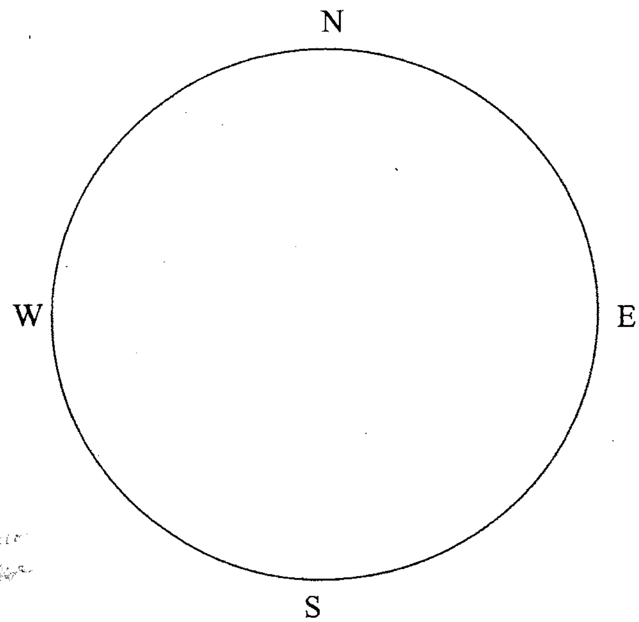
PASSERINE - Bird Point Count Data Sheet

Project Name: BUF RIV	Sample Point ID # & Name: BUFF 105 – Main St

Date	Start Time	Stop Time	X coordinate, Y coordinate
6/5/12	9:02 am	9:07 am	

Observer	Wind Spd.	Wind Dir.	Sky	Temp	Dominant (>50%) AES Habitat Type
NG	2	NE	1	53.?°F	

Other Habitats ______________________



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Eastern Phoebe

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
GRCA	P	N	5m	—	3m	//					
SOSP	?	N/NE	25m	—	—	/					
EAPH	P	NE	2m	—	?m	/					
BARS	Fo	NW	15-20m	var	var	//					
RBGU	F/Fo	var	var	var	60+m	///					
EUST	P	NW	10m	—	5m	/	///				
CHSW	P/F	N/NW	var	—	5-10m		///				
NOCA	P	SW	65m	—	—		/				

PASSERINE - Bird Point Count Data Sheet

BUFF RIV
Project Name

BUFF 105 - Miami St
Sample Point ID # & Name

6/19/12
Date

9:19am
Start Time

9:24am
Stop Time

X coordinate, Y coordinate

NG
Observer

2
Wind Spd.

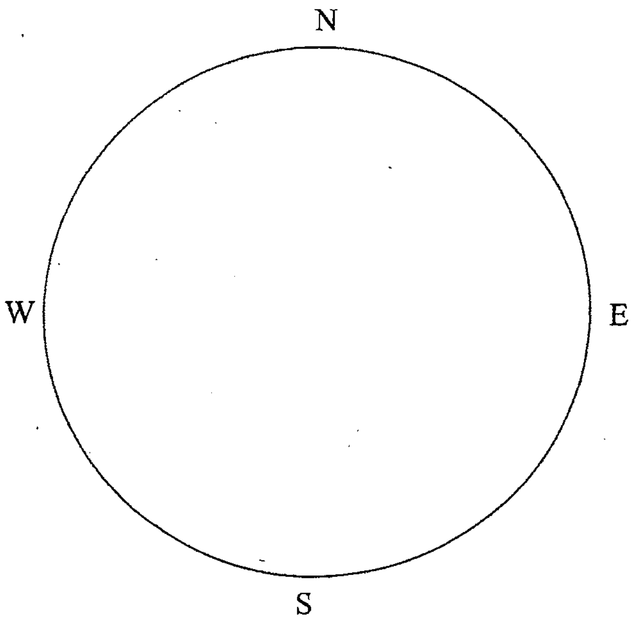
S/SW
Wind Dir.

0
Sky

72.1°F
Temp

Dominant (>50%) AES Habitat Type

Other Habitats



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
WIFL	?	E/SE	15m	—	2m	I					
BARS	P	N	20 m	E	5m	I	II				
AMGO	F	N	10m	N/NE	5m	II					
HOWR	P	SE/NE	25m	—	3m	II					
SOSP	P	NW	10m	—	2m	I					
CHSW	Fo	E	var	var	3-5m	III					
RWBL	P	SE	30 m	—	2m		II				

PASSERINE - Bird Point Count Data Sheet

BUFF [illegible]
Project Name

BUFF 105 - Miami St
Sample Point ID # & Name

6/27/12 | 9:15am | 9:20am
Date | Start Time | Stop Time

X coordinate, Y coordinate

NG | 3 | W/NW | 2 | 70.2°F
Observer | Wind Spd. | Wind Dir. | Sky | Temp

Dominant (>50%) AES Habitat Type

Other Habitats

N

W E

S

Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
AMGO	F	N	20m	W	3m	II					
AMRO	P	W/SW	15m	–	0m	I					
RODO	F	N	100+m	var	50m	10-20					
CHSW	F/Fo	E	25m	var	10m	IIII					
EUST	F	S	10-30m	var	5m		𝍸				
RBGU	F	W	var	N/S	var	I	IIII				
WIFL	P	E/SE	20m	–	2m		I				
											* Woodchuck

PASSERINE - Bird Point Count Data Sheet

Project Name: LBR

Sample Point ID # & Name: BUF 105 Miami

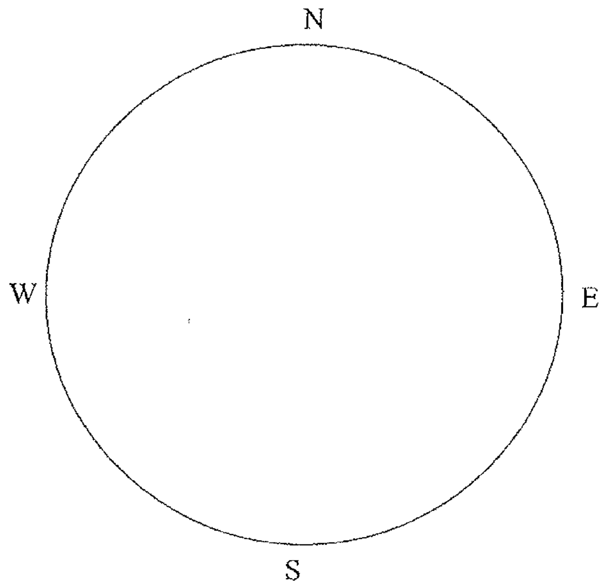
Date: 8/24/12 Start Time: 0942 Stop Time: 0947

X coordinate, Y coordinate:

Observer: [illegible] Wind Spd.: Wind Dir.: S Sky: 0 Temp: 70

Dominant (>50%) AES Habitat Type:

Other Habitats:



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
DOWO						X					1
EUST						X					7
AMGO						X					4
NRWS						X					3
MAWA							X				1
REVI							X				1
SAPH							X				1
BOES								X			4
AMCR								X			2
COHA								X			1

PASSERINE - Bird Point Count Data Sheet

Katorine + S Connell

Project Name: BUF KIV 1-0593

Sample Point ID # & Name: BUF 10[illegible] - across the tracks

Date: [illegible]

Start Time: [illegible]

Stop Time: 0557

X coordinate, Y coordinate: 78.855557, 42.866353

Observer: [illegible]

Wind Spd.: 0-5

Wind Dir.: [illegible]

Sky: [illegible]

Temp: 50[illegible]

Dominant (>50%) AES Habitat Type: [illegible] Forest

Other Habitats: [illegible] / Developed

N

W

E

S

Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
[illegible]						[illegible]					
[illegible]						[illegible]					
[illegible]		S	25			11	[illegible]	[illegible]			
		S	[illegible]				1				
		S	[illegible]				11				
NOCA	C	[illegible]	[illegible]				1				
DOWO	C	[illegible]	[illegible]					1			
[illegible]	–	[illegible]						11			
[illegible]	C		[illegible]					11			
[illegible]	[illegible]	[illegible]	[illegible]					1			

1 wt deer

PASSERINE - Bird Point Count Data Sheet

BNR
Project Name

BWF 106
Sample Point ID # & Name

1/22/12
Date

1039
Start Time

1039
Stop Time

X coordinate, Y coordinate

mjm
Observer

0-1
Wind Spd.

[illegible]
Wind Dir.

0
Sky

25
Temp

Dominant (>50%) AES Habitat Type

Other Habitats

N

W

E

S

Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes: wt peer tix + 1 doe obs.
-2 stick nests in street tree to the west

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
MOSP	C/Fo	W	100 m			HHT IIII					near white house
RBGU	F	W	100 m	SW	30	I					
BCCH	C	N	150 m				I				
PISI	F	N	50	SE			IIII				
AMCR	C	E	≈ 200					I			
AMCR	C	NE	≈ 100					I			
[illegible]	P	SW	≈ 200					I			

PASSERINE - Bird Point Count Data Sheet

Project Name: BUF RIV 11-0543

Sample Point ID # & Name: BUFF 106

Date: 4/27/12

Start Time: 10:21 am

Stop Time: 10:31 am

X coordinate, Y coordinate: 78.855557, 42.866353

Observer: NGr

Wind Spd.: 2.0 mph

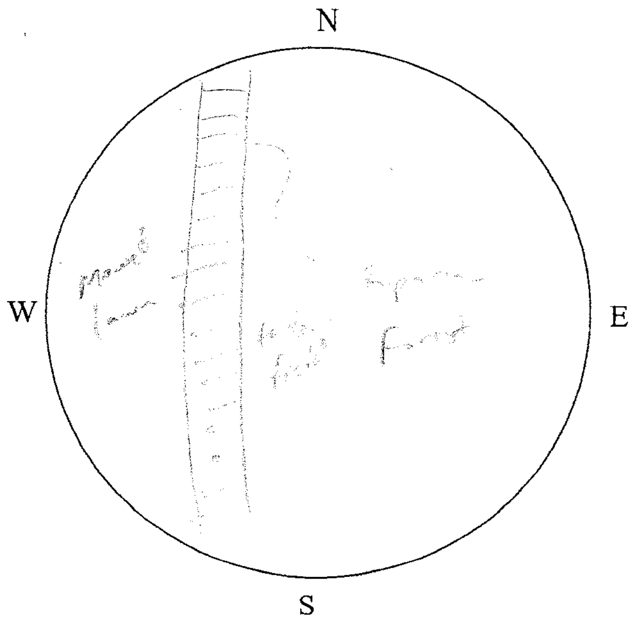
Wind Dir.:

Sky: 1

Temp: 43.8 F

Dominant (>50%) AES Habitat Type: Riparian Forest

Other Habitats: Fallow field, developed



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
HOWR	P		10m		—	1					
RWBL	P/F		var		var	11					
HOSP	F		var		var	10					
EUST	F/P		var		var		1111				
AMRO	Fo		30m-var		0m		1	1			
NOCA	P		50m		—			1			
SOSP	P		45m		2m			1			
RBGW	F		var		var			11			

PASSERINE - Bird Point Count Data Sheet

Project Name:	Sample Point ID # & Name: BVFF 106

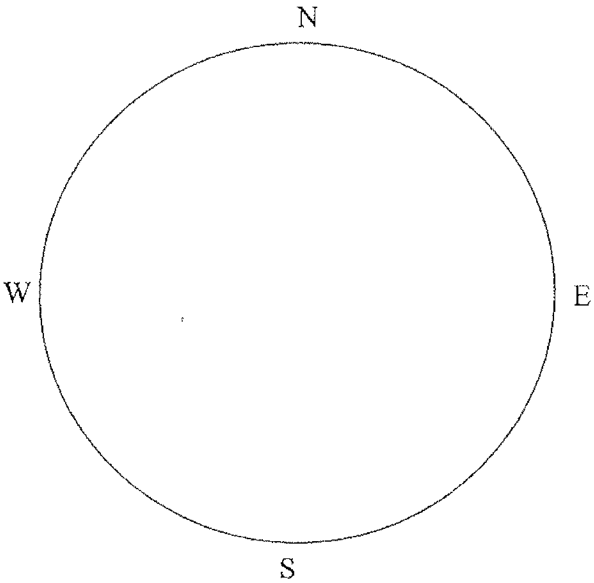
Date	Start Time	Stop Time
5/10/12	10:13 am	10:23am

X coordinate, Y coordinate

Observer	Wind Spd.	Wind Dir.	Sky	Temp
NG/MN	1-2	N/NW	1	53° F

Dominant (>50%) AES Habitat Type

Other Habitats



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
[illegible]	P	[illegible]	[illegible]	—	2m	1					Foraging to SW
[illegible]	[illegible]	[illegible]	[illegible]	—	1m	1					
[illegible]	[illegible]	NW		—	4m	1	[illegible]				
[illegible]	[illegible]	SW	[illegible]	[illegible]	[illegible]	II	II	~~IIII~~			
AMCR	F		250	[illegible]	30m	1					
EUST	Fo	N	[illegible]	—	[illegible]	II					
RBGU	F	S	700	S	50	1					
NOCA	P/C	SW	50m	—	8m		1				
HOWR	P/C	SE	30m	—	3m		1				
YWAR	P/C	E	35m	—	2m	1	1				
BHCO	P/C	E/SE	15m	—	4m		1	1			
RBGR	[illegible]	W	20m	—	10m			III			
YRWA	P/C	W	20m	—	5m			1			
											— Red Admiral

PASSERINE - Bird Point Count Data Sheet

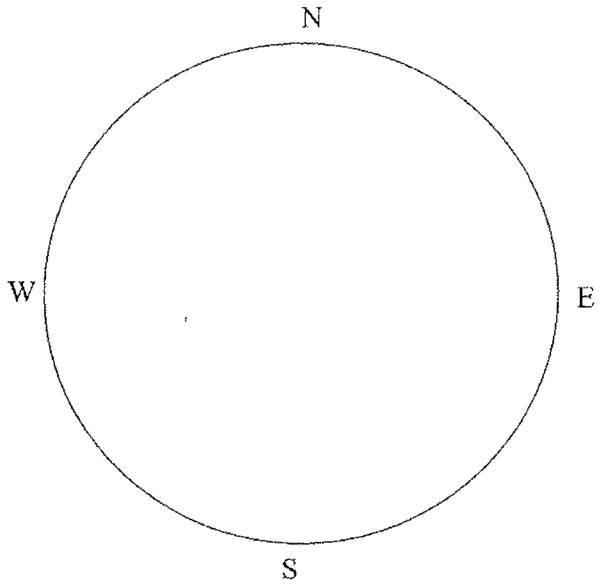
Project Name ______________________ Sample Point ID # & Name ______________________

Date ________ Start Time ________ Stop Time ________ X coordinate, Y coordinate ______________________

Observer ________ Wind Spd. ________ Wind Dir. ________ Sky ________ Temp ________

Dominant (>50%) AES Habitat Type ______________________

Other Habitats ______________________



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes: [illegible]

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
[illegible]		[illegible]	[illegible]			1					
[illegible]	C	[illegible]	100			1					
[illegible]			[illegible]			1					
[illegible]			50			1					
[illegible]	C	[illegible]	75			1					
[illegible]	C	W	25			1					
[illegible]	C	[illegible]				1					
[illegible]	C	[illegible]				1					
[illegible]	F	N	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			
[illegible]	[illegible]	W	30			1					
[illegible]	F					1	2				
[illegible]			15			1					
[illegible]			30			1					
[illegible]	[illegible]	N	50			1					[illegible]
[illegible]		E	75			1					
[illegible]		[illegible]					1				
[illegible]	C	[illegible]	[illegible]				1				
[illegible]							1				
[illegible]	C	[illegible]	[illegible]				1				
[illegible]		[illegible]					1				on wire
[illegible]		[illegible]						1			
BRTH	C	SW	200					1			
[illegible]	[illegible]	WSW	40					[illegible]			
[illegible]	C	[illegible]	200					1			[illegible]

PASSERINE - Bird Point Count Data Sheet

Project Name: BUF RIV

Sample Point ID # & Name: BVFF 106

Date: 6/5/12

Start Time: 8:16 am

Stop Time: 8:2[illegible] am

X coordinate, Y coordinate:

Observer: NG

Wind Spd.: 2-3

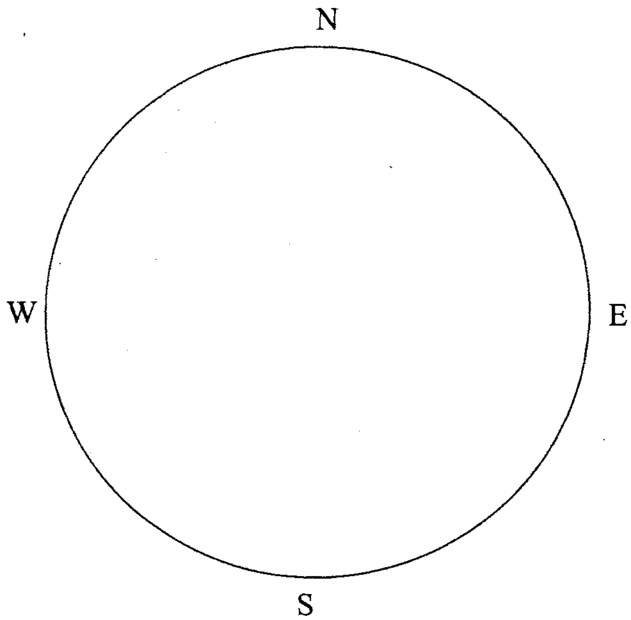
Wind Dir.: NE

Sky: 1

Temp: 54.2°F

Dominant (>50%) AES Habitat Type:

Other Habitats:



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
NOCA	P	NW	45m	—	5m	|					
AMCR	P	NE	~20m	—	0m	||					
GRCA	P	SE	25-30m	—	1-2m	||					
WIFL	P	E/NE	15m	—	1m	|					
RBGW	F	Var	Var	S-var	Var	||	||				
EUST	P	E/NE	15m	—	3m		|||				
YWAR	P	SE	20m	—	—		|||				
BLJA	P	SW	25m	—	3m		|				

PASSERINE - Bird Point Count Data Sheet

Project Name: BUFF B'V

Sample Point ID # & Name: BUFF 106

Date: 6/19/12

Start Time: 8:33am

Stop Time: 8:38am

X coordinate, Y coordinate:

Observer: NG

Wind Spd.: 0

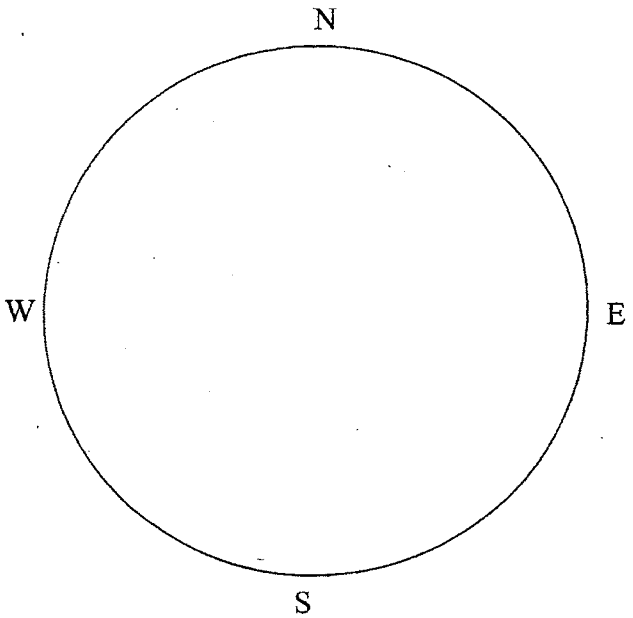
Wind Dir.: –

Sky: 0

Temp: 71.0°F

Dominant (>50%) AES Habitat Type:

Other Habitats:



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
AMCR	P	E	25m	–	1m	IIII					
YWAR	P	NW	10m	–	2m	III					
BRTH	P	SE	15m	–	1m	I					
RBGU	F	W	100+m	N/S	50m	III					
GRCA	P	W	15m	–	3m	I					
SOSP	P	NW	20m	–	1m	II					
EUST	P	S	1m	–	10m	I ~~IIII~~	II				
AMRO	P	E	50m	–	0m		I				
CEDW	P	SW	20m	–	10m		III				
NOCA	P	E/SE	25m	–	5m		I				
MODO	P	N/NE	45m	–	12m		I				
											* Grey squirrel

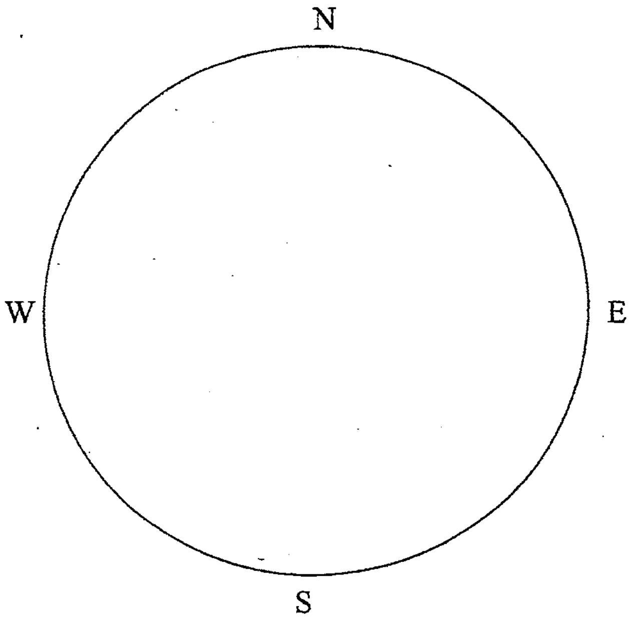
PASSERINE - Bird Point Count Data Sheet

BUFF RIW	BUFF 106
Project Name	Sample Point ID # & Name

Date	Start Time	Stop Time	X coordinate, Y coordinate
6/27/12	8:29 am	8:34 am	

Observer	Wind Spd.	Wind Dir.	Sky	Temp	Dominant (>50%) AES Habitat Type
WG	2	W/NW	0	68°F	

Other Habitats____________________



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
AMRO	F	S	10m	S	7m	IIII					
GRCA	P	SW	15m	–	2m	I					
BHCO	P/F	N	30m	–	3m	IIII					
AMCR	P	E	15m	–	5m	II					
CEDW	P	W	10m	–	3m	II					
DOWP	P/Fo	E	15m	–	3m		I				
HOSP	P/Fo	N/NE	20m	–	0m		IIII				
YWAR	P	W/NW	15m	–	2m		I				

PASSERINE - Bird Point Count Data Sheet

UBR
Project Name

BWF 106
Sample Point ID # & Name

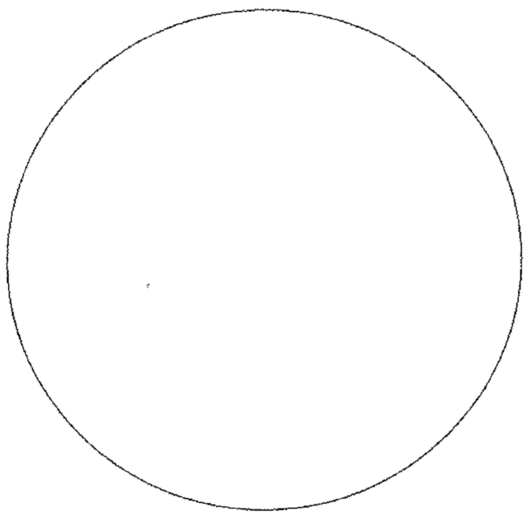
8/24/12 — Date
0859 — Start Time
0904 — Stop Time

X coordinate, Y coordinate

JM — Observer
1 — Wind Spd.
SE — Wind Dir.
10 — Sky
67 — Temp

Dominant (>50%) AES Habitat Type

Other Habitats



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
BCCH						X					I
NAWA						X					I
YWOR						X					I
INBU						X					I
NOCA							X				I
AMCR							X	X			II (2)
RBGU							X	X			卌 I
RBGR											I

PASSERINE - Bird Point Count Data Sheet

Project Name: BUF [illegible]

Sample Point ID # & Name: BUF 107 – [illegible]

Date: 11/20/[illegible]

Start Time: 0905

Stop Time:

X coordinate, Y coordinate: 78.859349, 42.856429

Observer: [illegible]

Wind Spd.: 5-10

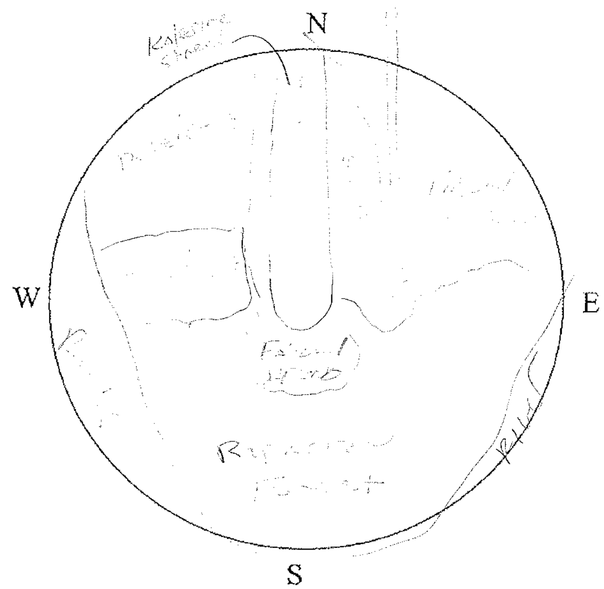
Wind Dir.: NE

Sky: 0

Temp: [illegible]

Dominant (>50%) AES Habitat Type: Riparian Forest

Other Habitats: (meadow) [illegible] Field / [illegible]



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
	[illegible]	S	100	E	30		1	11			
AMCR	F	SW	10[illegible]	[illegible]	30	[illegible]		[illegible]			
RODP	P	N	150	[illegible]	[illegible]				[illegible]		

PASSERINE - Bird Point Count Data Sheet

BNR
Project Name

BNF 107 End of Keith St.
Sample Point ID # & Name

1/22/12
Date

1109
Start Time

1119
Stop Time

X coordinate, Y coordinate

[illegible]
Observer

[illegible]
Wind Spd.

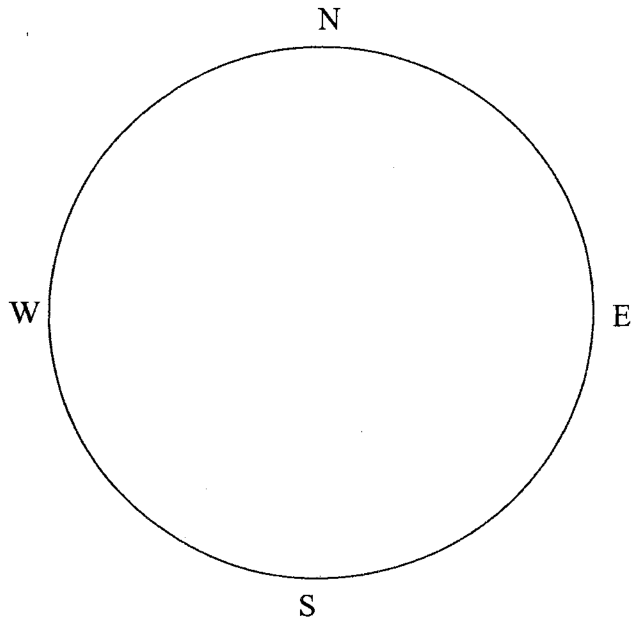
[illegible]
Wind Dir.

1
Sky

28
Temp

Dominant (>50%) AES Habitat Type

Other Habitats



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes: Fox, deer, [illegible] cat or mink [illegible]

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
BCCH	C/Fo	S	25			II					
SOSP	C	SE	30				I				

PASSERINE - Bird Point Count Data Sheet

BUF RIV 11-0543
Project Name

BUFF 107 - End of Katherine St
Sample Point ID # & Name

4/27/12
Date

10:34 am
Start Time

10:44 am
Stop Time

78.859349, 42.856429
X coordinate, Y coordinate

NK
Observer

2.1 mph
Wind Spd.

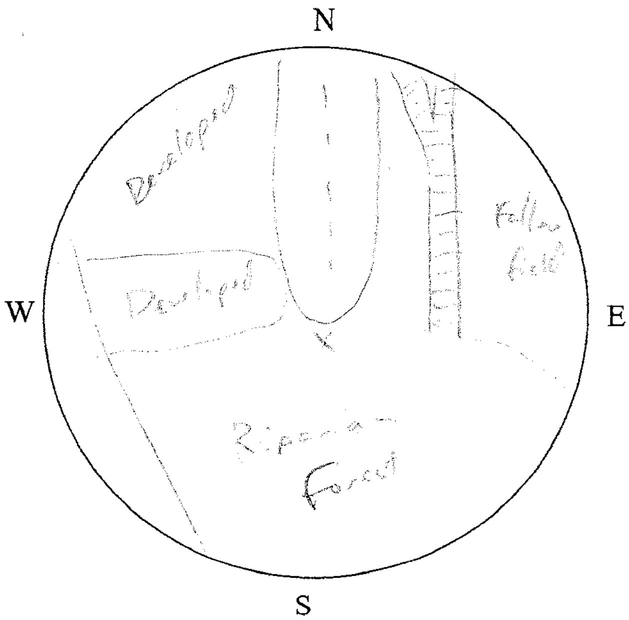
Wind Dir.

2
Sky

41.1°F
Temp

Riparian Forest
Dominant (>50%) AES Habitat Type

Other Habitats Fallow field / Developed



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
CAGO	P		var		2m	II		II			
AMRO	P/Fo		25m		var	I					
–	F		var		var		IIII	~~IIII~~			Unknown Gulls
RWBL	F/P		var		var			II			

PASSERINE - Bird Point Count Data Sheet

Project Name: ______________________

Sample Point ID # & Name: BUFF 107A (107-109)

Date: 5/10/12 | Start Time: 1032 | Stop Time: ______

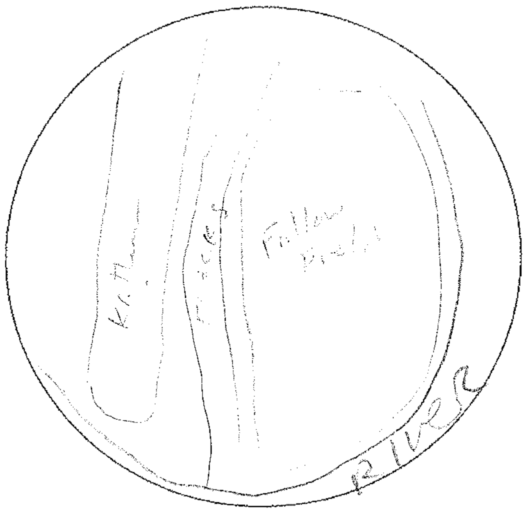
X coordinate, Y coordinate: ______________________

Observer: NC/MW | Wind Spd.: 1 | Wind Dir.: N/NW | Sky: 1 | Temp: 55°F

Dominant (>50%) AES Habitat Type: ______________________

Other Habitats: ______________________

N

W  E

S

Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes: monarch

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
EMGO	C	NE	75			||||					
[illegible]	C	E	50			||					
TUVU	F/S	N	50	var	100						
EUST	F/P	N	20	var	2	||||					
CAGO	F	N	0	E	10	||					
ALFL	C	N	30			|					
EUST	P	S	150				||||				
MAWA	C	NE	75				|				
SOSP	C	SW	50				|				
NOCA	C	E					|				
YWAR	C/T	W	75				|				
YWAR	C/T	E	25				|				
RWBL	F	SE	5	N	3		|				
RBGU	F	E	100	N	200		||||				
TUVU	F	NE	200	NW	10		|				
CAGO	F	E	250	S	15			|			
AMCR	F	E	250	var	20			|			
TRES	F/Fo	S	75	W	20			|			
RWBL	P/C	W	75					|			
BACS	Fo	N	20	W	5			||			
MALL	F	S	150	W	15			||			
TUVU	F	NE	75	S	15			|			
											possible MAWA

PASSERINE - Bird Point Count Data Sheet

[illegible] — Project Name

107A [illegible] — Sample Point ID # & Name

5/11/12 — Date

0634 — Start Time

Stop Time

X coordinate, Y coordinate

[illegible] — Observer

1 — Wind Spd.

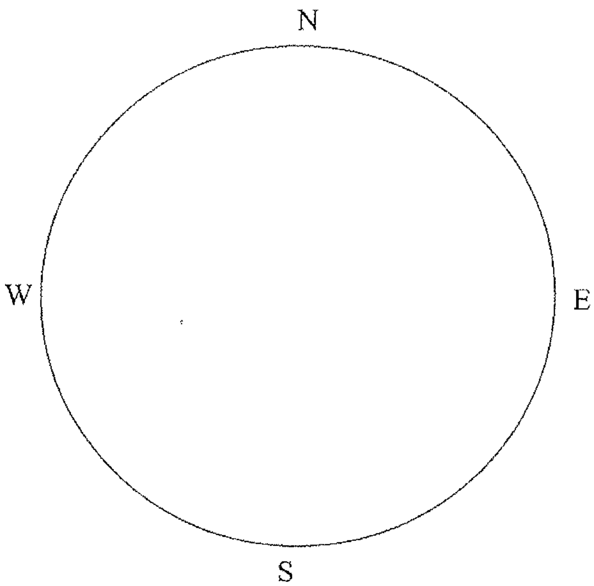
[illegible] — Wind Dir.

C — Sky

45° — Temp

Dominant (>50%) AES Habitat Type

Other Habitats



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
[illegible]			[illegible]								
[illegible]						1					
[illegible]	[illegible]		[illegible]								
[illegible]		[illegible]	[illegible]								
[illegible]	[illegible]	[illegible]									
[illegible]	C	[illegible]	[illegible]								
[illegible]		[illegible]	150			1					
[illegible]		[illegible]	[illegible]								
[illegible]	[illegible]	[illegible]									
[illegible]	[illegible]										
[illegible]	[illegible]					1					
[illegible]						1					
[illegible]											
[illegible]											
	[illegible]	[illegible]	[illegible]								
[illegible]							1				
VEWBL	SW→C		2(0)					1			
[illegible]	C/H	S	80								
		[illegible]	[illegible]	[illegible]							
	F	SS	[illegible]	[illegible]	[illegible]			IIII			
MALL	F	S	100	W	20			II			
[illegible]	[illegible]	[illegible]	[illegible]	W	35			IIII			
SOSP	[illegible]	SS									
[illegible]											
[illegible]	[illegible]	[illegible]									

PASSERINE - Bird Point Count Data Sheet

BUFF RW

Project Name

BUFF 107/109

Sample Point ID # & Name

6/5/12

Date

8:29 am

Start Time

8:34 am

Stop Time

X coordinate, Y coordinate

NG

Observer

2

Wind Spd.

NE

Wind Dir.

1

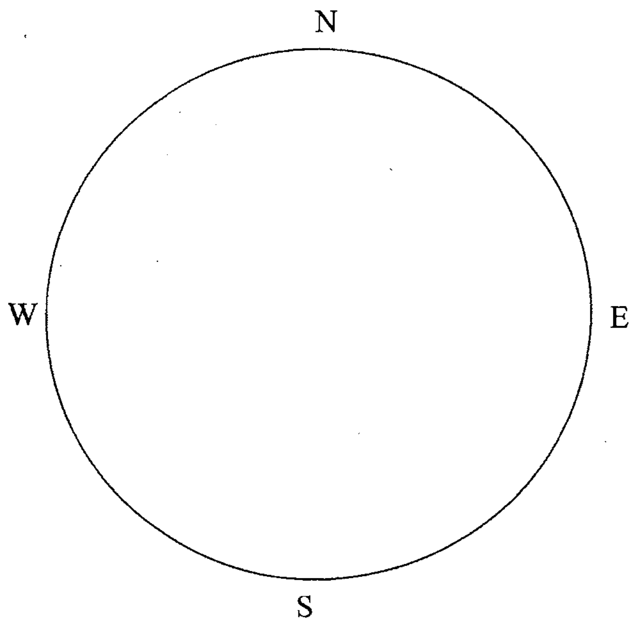
Sky

58.1°F

Temp

Dominant (>50%) AES Habitat Type

Other Habitats



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
YWAR	P	NE	10 m	—	1 m	I	I				
GRCA	P	NW	15	—	2 m	I					
AMGO	F	N	20 m	W	5 m	I	I				
EUST	F	N	30 m	E	3 m	II					
COYE	P	SE	10 m	—	2 m	I					
BHCB	P/F	W/NW	15 m	—	5 m	II	I				
RBGU	F	Var	Var	Var	70 m		IIII				

PASSERINE - Bird Point Count Data Sheet

BUFF RIV
Project Name

BUFF 107/109
Sample Point ID # & Name

6/15/12
Date

8:45 am
Start Time

8:50 am
Stop Time

X coordinate, Y coordinate

NG
Observer

1-2 mph
Wind Spd.

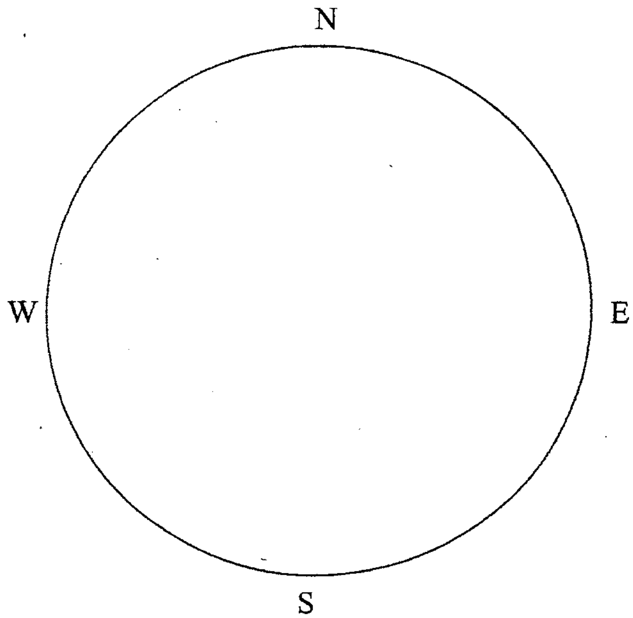
NE
Wind Dir.

0
Sky

71.2°F
Temp

Dominant (>50%) AES Habitat Type

Other Habitats



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
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Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
AMRO	P	N	15 m	—	0 m	I					
YWAR	P	W,NE	var	—	1 m	III					
AMGO	F	E	20 m	S	3 m	I					
NOFL	P	NE	35 m	—	2 m	I					
AMCR	F	N/NE	100 m	var	20 m	II					
HOWR	P	SE	35 m	—	2 m	II					
BARS	Fo	S	10 m	N	5 m		II				
CEDW	F	W	15 m	NE	10 m		II				
RBGU	F	W,NE	var	var	20 m		IIII				

PASSERINE - Bird Point Count Data Sheet

BUFF RIV
Project Name

BUFF 107/109 - Katherine St (RR tracks)
Sample Point ID # & Name

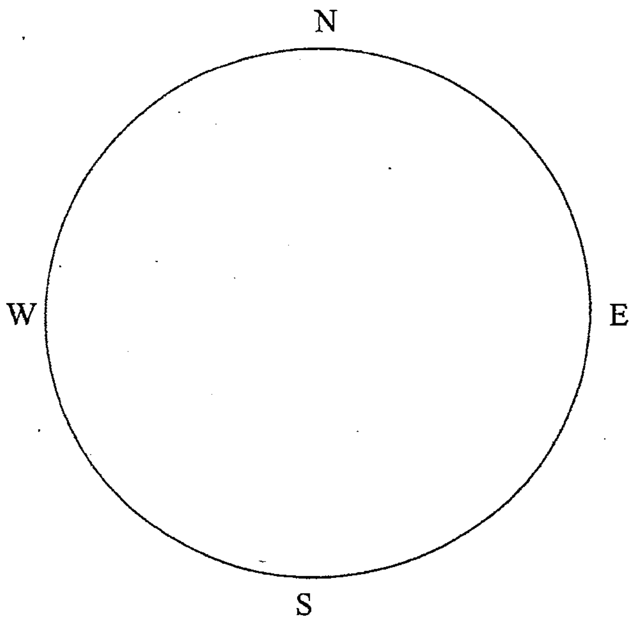
Date	Start Time	Stop Time
6/27/12	8:41 am	8:46 am

X coordinate, Y coordinate

Observer	Wind Spd.	Wind Dir.	Sky	Temp
NG	2	W/NW	0	69.3°F

Dominant (>50%) AES Habitat Type

Other Habitats



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
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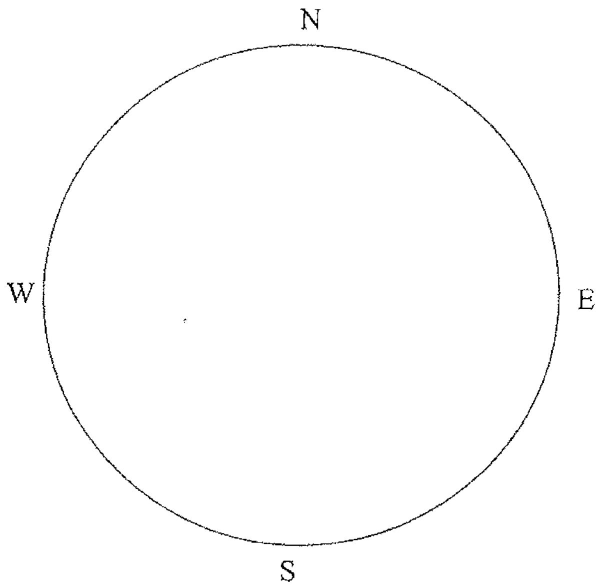
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
YWAR	P	N/S	10-15m	—	1m	II	I				
CHSW	F/Fo	W	30m	S	10m	III					
RBGU	F	W	var	N,S	var	~~IIII~~					
GRCA	P	SE	25m	—	1m	I					
EUST	P/F	S	20m	E	5m	II					
OSPR	F/Fo	N/NW	60m	E	25m		/				
CEDW	F	N	5m	W	7m		I				

PASSERINE - Bird Point Count Data Sheet

Project Name: LBR BWF	Sample Point ID # & Name: 107/109
Date: 8/24/12	Start Time: 0910
Stop Time: 0915	X coordinate, Y coordinate:
Observer: mm	Wind Spd.: 1
Wind Dir.: S	Sky: 0
Temp: 68	Dominant (>50%) AES Habitat Type:
Other Habitats:	



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
TUVU	S					I					
COYE	C					I					
YWCR	C/P					I					
AMCR	C					I					
TRES	F						II				
[redacted]							IIII				
WODU	F										
BHCO	C						I				
RWBL	C						IIIII II				
COGR	C						IIIII I				
[redacted]											
CEDW	/						III				

PASSERINE - Bird Point Count Data Sheet

Project Name

Sample Point ID # & Name

Date

Start Time

Stop Time

78.857975 , 42.857289

X coordinate, Y coordinate

Observer

Wind Spd.

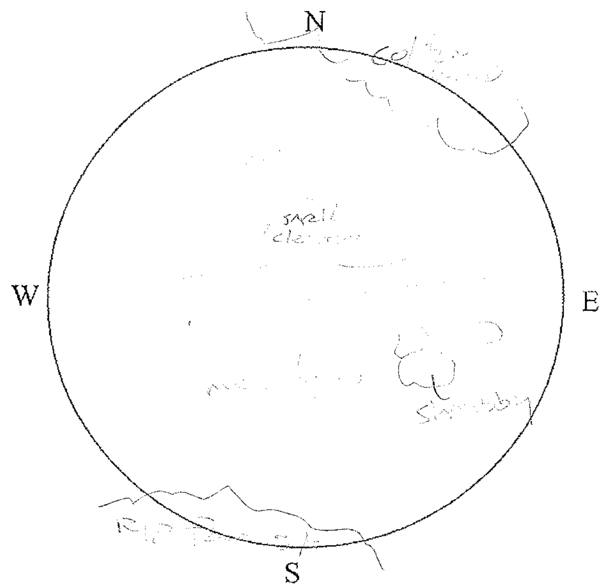
Wind Dir.

Sky

Temp

Dominant (>50%) AES Habitat Type

Other Habitats Forest



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
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4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	110		[illegible]				

PASSERINE - Bird Point Count Data Sheet

BNR
Project Name

BUF 109 Riparian near shack (Kath St.)
Sample Point ID # & Name

1/27/12
Date

1057
Start Time

1107
Stop Time

X coordinate, Y coordinate

NJM
Observer

0-1
Wind Spd.

E
Wind Dir.

1
Sky

25
Temp

Dominant (>50%) AES Habitat Type

Other Habitats

N

W E

S

Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes: well traveled by man + dog (fox)
deer

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
SLSP	F	N	15	S	5	||||| |||					
AMRO	F	N	10	S	5	||||					
[illegible]	Fo	N	20								
[illegible]	P	W	25								
DOWO	Fo	N	20								
AMCR	C	NE	250+				(37)				
MODO	P/F	NE	75	N	10			|| (2)			
NOHA	C/P	NW	150								female

PASSERINE - Bird Point Count Data Sheet

Project Name: BUF RIV 11-0543

Sample Point ID # & Name: BUFF 108+109 (did pts together)

Date: 4/27/12

Start Time: 10:45am

Stop Time: 10:55am

X coordinate, Y coordinate: 78.57975, 42.857289

Observer: NG

Wind Spd.: 2 6mph

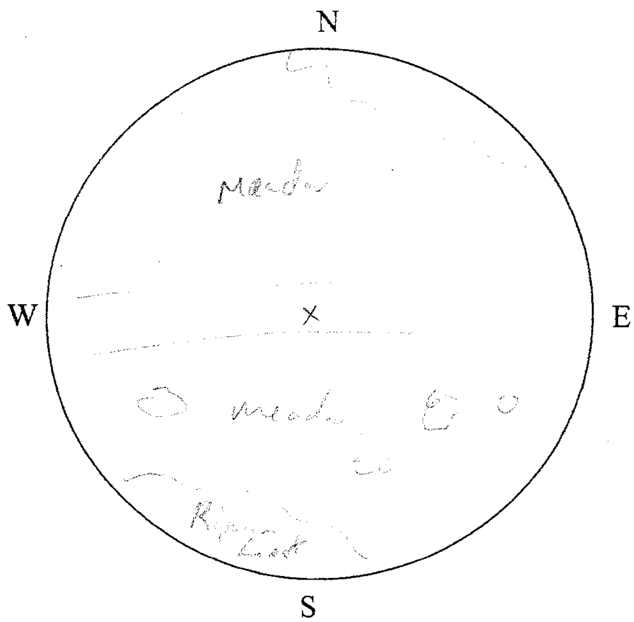
Wind Dir.:

Sky: 3

Temp: 41.6°F

Dominant (>50%) AES Habitat Type: Fallow field

Other Habitats: Riparian forest / Shrub scrub



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
RWBL	F/P		var		var	||||		|			
WTSP	P		30m-var		–	|	|				white throated sparrow
SOSP	P		var		var		||				
EAPH	P		–		–		|				eastern phoebe
CAGO	P		~var		0m		||				
NOCA	F		var		var			|			
WOOD	F		var		var			|			O→
AMRO	F/P		var		var			|			

PASSERINE - Bird Point Count Data Sheet

Project Name: [illegible]

Sample Point ID # & Name: [illegible]

Date: [illegible] | Start Time: [illegible] | Stop Time: [illegible] | X coordinate, Y coordinate: 78.835957, 42.857185

Observer: [illegible] | Wind Spd.: [illegible] | Wind Dir.: [illegible] | Sky: [illegible] | Temp: [illegible]

Dominant (>50%) AES Habitat Type: [illegible]

Other Habitats: [illegible]

N

W E

S

Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
CACO	P/[illegible]	S	250	/	/	(14)					
[illegible]	F	NW	100	[illegible]	[illegible]	[illegible]					
[illegible]	F	[illegible]	75	W	[illegible]			[illegible]			

PASSERINE - Bird Point Count Data Sheet

BNR
Project Name

BUF 108 in Field b/w 107+109 (Kath St)
Sample Point ID # & Name

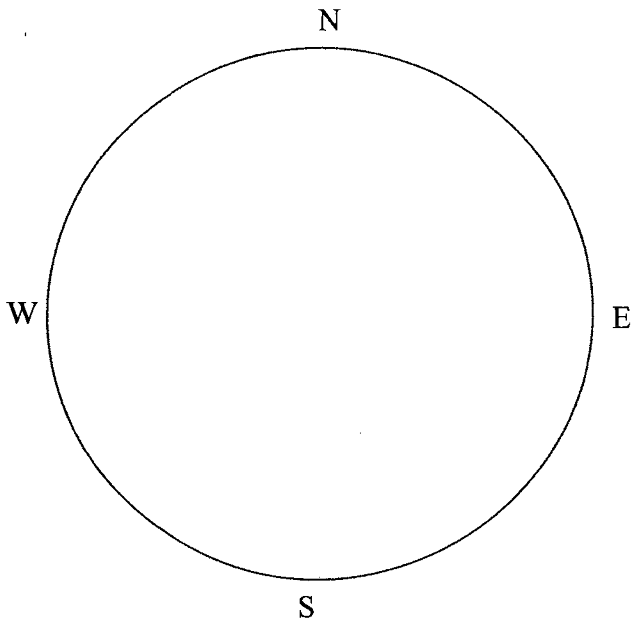
1/22/12 — Date
1045 — Start Time
1055 — Stop Time

X coordinate, Y coordinate

MJM — Observer
2 — Wind Spd.
E — Wind Dir.
1 — Sky
25 — Temp

Dominant (>50%) AES Habitat Type

Other Habitats



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes: deer, dom. dog trx

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
DUNO	Fo/P	E	200	NW	15	1					
RBGU	F	S	300	W	30'	(20)					from Cargill-S crowtown Run
AMGO	F	ESE	50	WNW	10	1					male
ROPI	F	W	250	N	20		11(3)				
DUCK SP	F	WNW	KM+	S	150+		(30+)				too far to ID
ROPI	P	NW	KM+	—	/			500+			Roost on bldg

PASSERINE - Bird Point Count Data Sheet

DNR BUF AOC
Project Name

BUF 108
Sample Point ID # & Name

5/10/12
Date

1050
Start Time

1100
Stop Time

X coordinate, Y coordinate

MAM, NG
Observer

W
Wind Spd.

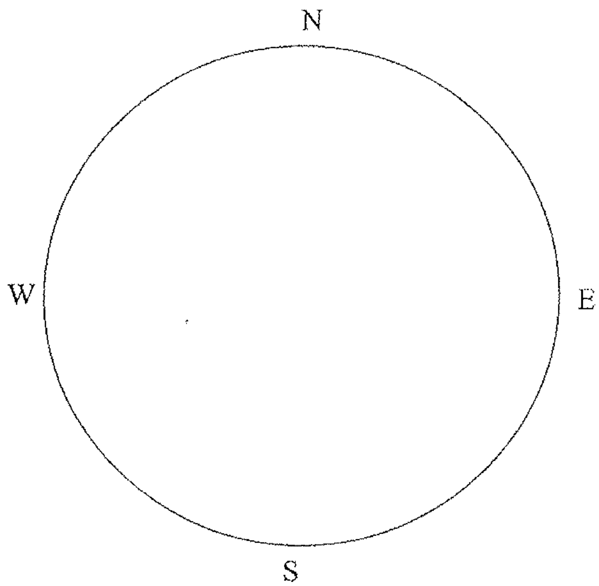
1
Wind Dir.

75%
Sky

56°
Temp

Dominant (>50%) AES Habitat Type

Other Habitats



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes: w F [illegible]

Active maintenance [illegible]

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
[illegible]	F	N	30	VAR	5-100	III					
[illegible]	C/T/B	NW	100			I					
[illegible]	[illegible]	NE	20			I					[illegible]
[illegible]	[illegible]	SE	15			I					[illegible] Fo
YWAR	[illegible]	SW	50			I					
[illegible]	C/F	N	15			[illegible]					
[illegible]	P	S	25			[illegible]					4 adult 2 gosling
RBGU	F	W	50	var	100		IIII				
COYE	C	NW	100				I				
EUST	P	NW	30				[illegible]				
[illegible]	C	NW	75				I				
NOCA	C	N	50				I				
NRWS	AF	S	20	var	10		I				
DOWO	Fo	SE	15					I			
RBGU	F	N	75	W, W	500			II			
BHCO	P	N	100					I			

HOFI

6 BAE

PASSERINE - Bird Point Count Data Sheet

Project Name:

Sample Point ID # & Name: BWD 1C3 [illegible]

Date: 5/11/[illegible]

Start Time:

Stop Time:

X coordinate, Y coordinate:

Observer:

Wind Spd.:

Wind Dir.:

Sky:

Temp:

Dominant (>50%) AES Habitat Type:

Other Habitats:

N

W E

S

Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
		N	200			1					
			75			1					(5 YWAR counter-singing)
		NE	5			1					
		NW	50			1					
		W	25			1					
						1					
						1					
		N	25			1					
			30			IIII					
		S	25	VAR	30						
	C	NE	75				1				
							1				
	Fo							1			
	Fo							11			
MODU	Fo							11			
	P										

PASSERINE - Bird Point Count Data Sheet

Project Name: BUF RIV

Sample Point ID # & Name: BVFF 108

Date: 6/5/12

Start Time: 8:38 am

Stop Time: 8:43 am

X coordinate, Y coordinate:

Observer: NG

Wind Spd.: 2

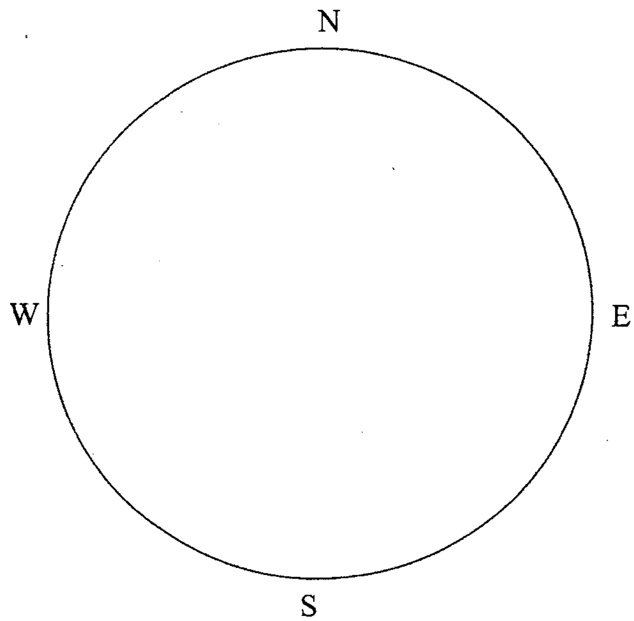
Wind Dir.: NE

Sky: 1

Temp: 58.0°F

Dominant (>50%) AES Habitat Type:

Other Habitats:



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
YWAR	P	E	10-15m	–	5 m	III					
AMGO	F	W	va	E	10 m	II					
AMRO	P	W/SW	20 m	–	2m	II	I				
SOSP	P	SE	15 m	–	2m	I					
RBGU	F	va	va	va	50+ m	III					
TUVU	F	W	100m	var	90 m		I				
GRCA	P	N	25 m	–	2m		I				

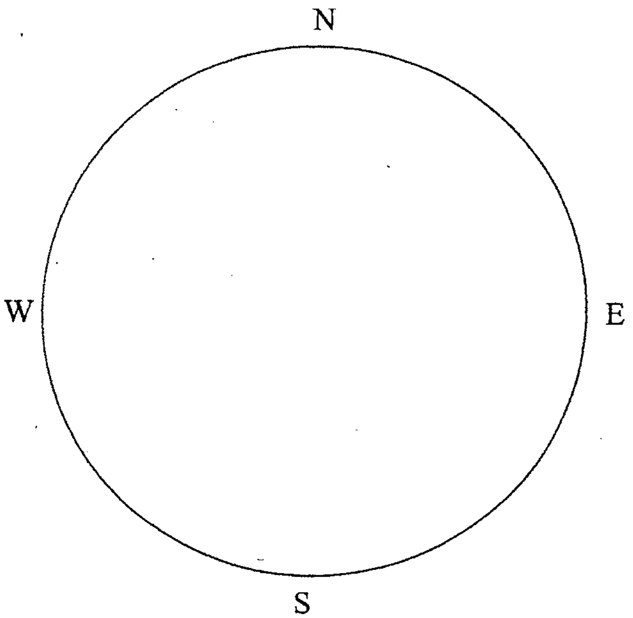
PASSERINE - Bird Point Count Data Sheet

BUFF RIV	BUFF 108
Project Name	Sample Point ID # & Name

6/15/12	8:53am	8:58am	
Date	Start Time	Stop Time	X coordinate, Y coordinate

NG	0	—	0	72.3°F	
Observer	Wind Spd.	Wind Dir.	Sky	Temp	Dominant (>50%) AES Habitat Type

Other Habitats____________________



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
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Behavior		Upland Coniferous Forest
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P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
YWAR	P	W/SW	15m	—	3m	III					
GRCA	P	W	10m	—	2m	I					
RBGU	F	[illegible]	[illegible]	-	[illegible]	II	II				
CEDW	F	N	20m	SE	5m	III					
HOWR	P	SE	25m	—	2m	I					
AMCR	F	N	100m	W	70m	I					
BARS	Fo	W	30m	SW	25m	II					
SOSP	P	N/NE	5m	—	3m	I					
AMGO	F	N/NW	10m	S	4m		III				
											*whitetail deer (1-2)

PASSERINE - Bird Point Count Data Sheet

Project Name: BUFF RW

Sample Point ID # & Name: BUFF 102 - Katherine St

Date: 6/27/12

Start Time: 8:49 am

Stop Time: 8:54 am

X coordinate, Y coordinate:

Observer: NG

Wind Spd.: 2

Wind Dir.: W/NW

Sky: 0

Temp: 69.3°F

Dominant (>50%) AES Habitat Type:

Other Habitats:

N

W E

S

Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
GRHA	P	E	5m	–	2m	///					
YWAR	P	E	5m	–	2m	///	/				
EAKI	Fo/P	S/SE	50m	–	60m	/					
CHSW	Fo	S	var	var	var	////					
AMRO	P	SW	25m	–	3m	/	/				
GREG	F	W	50m	S	40m		/				Egret - black legs
RBGU	F	var	var	N/S	var	//	~~////~~				
											* Whitetail Deer

PASSERINE - Bird Point Count Data Sheet

Project Name: BUF	Sample Point ID # & Name: BUF 105
Date: 5/24/12	Start Time: 917
Stop Time: 922	X coordinate, Y coordinate:
Observer: [illegible]	Wind Spd.:
Wind Dir.: S	Sky: 0
Temp: 70	Dominant (>50%) AES Habitat Type:

Other Habitats

N

W E

S

Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
BCCH	C					I					
YWAR	C					I					
CSWA	Fo					I					
MAWA	Fo					I					
REVI	C/Fo					I					
BHVI	Fo					II					
SOSA	Fo					I					
LSYE	Fo					I					o/on shore
MALL	P					II					
DCCO	F					IIII					
RBGU	F					IIII					
CAGO	F						14				
MALL	F						III				
NOCA	C						I				
BLJA	F/C						II				
CMPO	F						I				
NAWA	Fo						I				
COYE	C						I				
RTHA	S						I				
SOSP	C						I				
[illegible]											
TUTI	C/Fo						I				
EAPH	Fo						I				
EUST	F						16				
MODO	F						II				

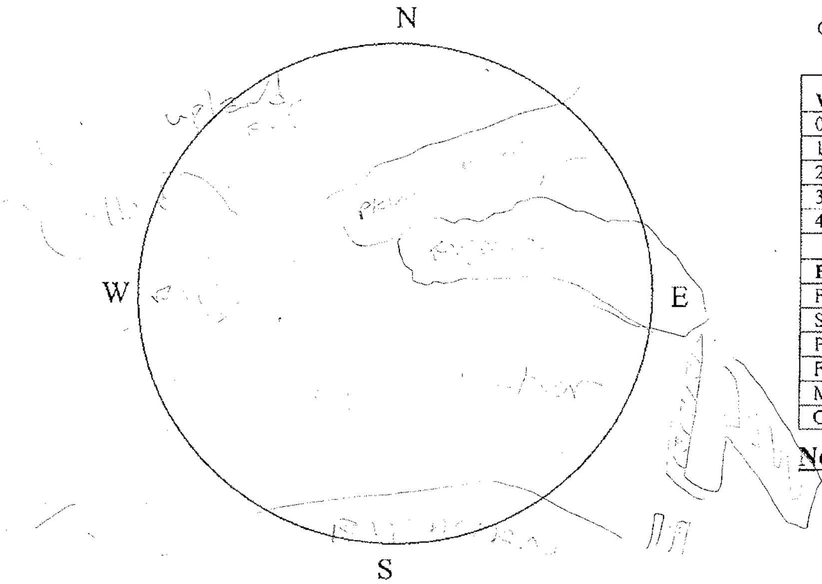
PASSERINE - Bird Point Count Data Sheet

[illegible]	BUF[illegible] [illegible] Drive
Project Name	Sample Point ID # & Name

11/2[illegible]	0[illegible]	[illegible]	78.851701 , 42.863674
Date	Start Time	Stop Time	X coordinate, Y coordinate

[illegible]	0-5	ENE	[illegible]	[illegible]	[illegible]
Observer	Wind Spd.	Wind Dir.	Sky	Temp	Dominant (>50%) AES Habitat Type

Other Habitats [illegible] (open woodland) Riparian Buffer



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
[illegible]	[illegible]	N	10	/	/	~~||||~~ ||					
[illegible]	[illegible]	N	10	/	/	||					
CACG	T	SE	[illegible]	/	/	[illegible]					
[illegible]	[illegible]	N[illegible]	[illegible]								
[illegible]	[illegible]	[illegible]	[illegible]	vor/W	30		~~||||~~ ||				
[illegible]	T	SE	250				||||				
[illegible]	[illegible]	SE	20	/	/		|||				
[illegible]	P(O)	W						||			
[illegible]	[illegible]	N	[illegible]	[illegible]				[illegible]			
UMPA	F	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]			

PASSERINE - Bird Point Count Data Sheet

Project Name: BNR

Sample Point ID # & Name: BUF 110

Date: [illegible]

Start Time: 1125

Stop Time: 1135

X coordinate, Y coordinate:

Observer: Mm

Wind Spd.: 0-1

Wind Dir.: E

Sky: 2

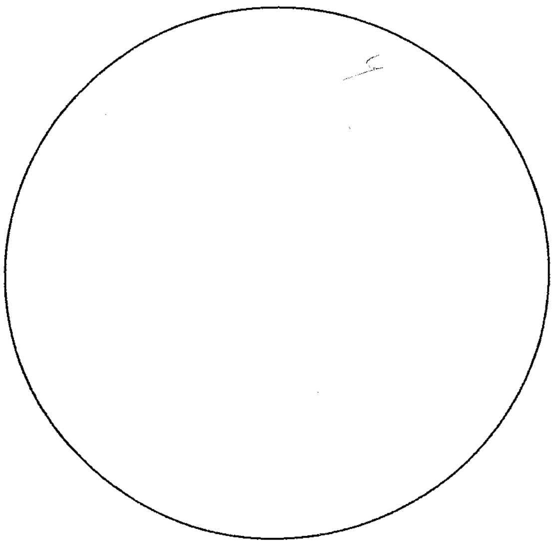
Temp: 29

Dominant (>50%) AES Habitat Type:

Other Habitats:

N

W



E

S

Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

* do msp here
  possible msp [illegible] [illegible] river

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
AMGO	F	S	0	NW	30	26					
[illegible]	F	S	0	NW	30	6 (~)					
UNRaptor	P	ESE	750								Perched on [illegible] bridge (bad lighting)
AMCR	C	S	500+			||| (~)					
DEJU	Fo	E	25				~~||||~~ ~~||||~~ ||				
DOWO	C	S	300					|			
DOWO	C	N	40					|			

PASSERINE - Bird Point Count Data Sheet

Project Name: BUF RIV 11-0543

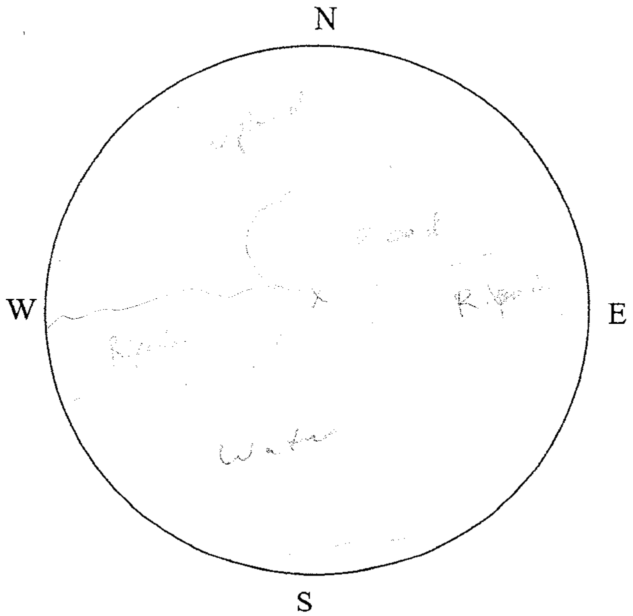
Sample Point ID # & Name: Buff 110 - End of Smith St

Date: 4/27/12 | Start Time: 9:54 am | Stop Time: 10:04 am | X coordinate, Y coordinate: 78.851701, 42.863674

Observer: NG | Wind Spd.: 2-3 mph | Wind Dir.: | Sky: 3 | Temp: 37.4°F

Dominant (>50%) AES Habitat Type: Open water

Other Habitats: Riparian Shrub, Open Woodland



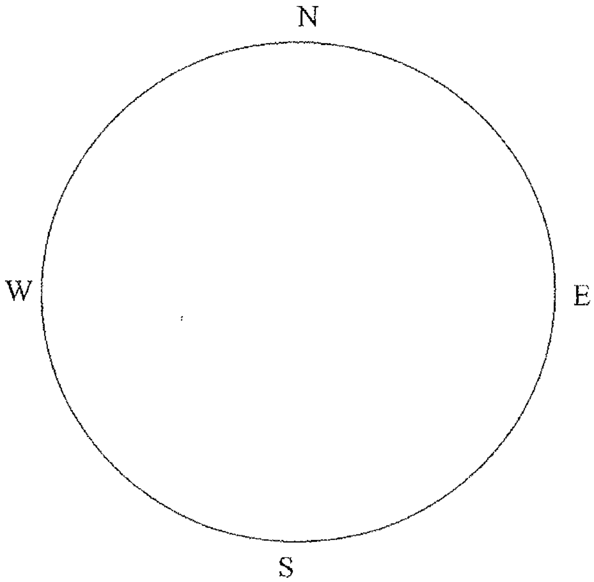
Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
NOCA	P		60m-var		—	I		I			
CAGO	P		var		0m	HHT I	II I	II			w/ 5-6 chicks
EUST	P		50m		10m	I					
RWBL	P		var		—	II		II			
MALL	P		var		0m	I					
TUVU	F		var		var			II			
HAWO	Fo		40m		25m			I			

PASSERINE - Bird Point Count Data Sheet

Project Name:	Sample Point ID # & Name: BUFF 110 - Smith St
Date: 5/10/12	Start Time: 9:26 am
Stop Time: 9:36 am	X coordinate, Y coordinate:
Observer: NG/MM	Wind Spd.: 1-2
Wind Dir.: N/NW	Sky: 1
Temp: 49°F	Dominant (>50%) AES Habitat Type:
Other Habitats:	



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
GBHE	F	S	120m	N	50m	//					
RBGU	F	S	var	var	var	//+					
CAGO	P	Var	Var	—	Var	12					
EUST	F	S	Var	Va	Var	///					
MALL	P	W	75m			//					
NOCA	P/C	E	50m	—	3m	//					
AMGO	F	W	25m	—		///	10+				
YWAR	P/C	W	30m	—	—	//		/			
DOWO	P/C	W/NW	50m		—	//					
GCFL	P/C	W	150m		—	/					
CSWA	P/C	W	50m		—	/					
RWBL	P	W/N	20m	—	1m		/				
SOSP	P/C	W	25m	—	2m		/				
BRTH	P/C	S/SE	30m	—	—		/				
MODO	F	N	var	S	—			/			
											Eastern Painted Turtle
											↳ 4 (3 adults, 1 subadult)
											↳ 2+1+3
											- WAVI
											- Bullfrog - 2
											- MOWA
											- Muskrat evidence
											- HOWR

PASSERINE - Bird Point Count Data Sheet

BMR BUF ACC
Project Name

BUF 100 ([illegible]) Smith St.
Sample Point ID # & Name

5/11/12
Date

0715
Start Time

0725
Stop Time

X coordinate, Y coordinate

[illegible]
Observer

1
Wind Spd.

NW
Wind Dir

0
Sky

51°
Temp

Dominant (>50%) AES Habitat Type

Other Habitats

N

W E

S

Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
MOCA	[illegible]	NW	20			1					
YWAR		N	15			1					
YWAR		N	50			1					
YWAR		NE	75			1					
[illegible]		N	100			1					
[illegible]		[illegible]	[illegible]			1					
[illegible]		[illegible]	75			1					
RBGU	F	[illegible]	[illegible]	[illegible]	10-75	IIII IIII					
CAGO	P	S	60			II					
[illegible]	C/F	[illegible]	50			1					
RWBL		[illegible]				1					
YWAR		NE	200			1					
AMGO						1					
BARS	F/U	N	5	NE	2	1					[illegible]
GRCA	C/+						1				
MALL	[illegible]	W		N	2		IIII				4 drake 1 hen
AMRO	C	N	25				1				
CSWA	C	N	50				1				
CAGO	P	SW	400					11			
[illegible]	P	[illegible]	1KM					11			
YWAR	C	S	200					1			
[illegible]		NW	[illegible]					1			
[illegible]	[illegible]	NW	15					1			
BCCH	C	E	50								
[illegible]	C	SE	70								calling [illegible]
[illegible]	C	S	50								

[illegible] C/P 75 N [illegible] 30 1 [illegible]

PASSERINE - Bird Point Count Data Sheet

Project Name: BUF RIV

Sample Point ID # & Name: BUFF 110 - [illegible]

Date: 6/5/12

Start Time: 8:02 am

Stop Time: 8:07 am

X coordinate, Y coordinate:

Observer: NG

Wind Spd.: 2

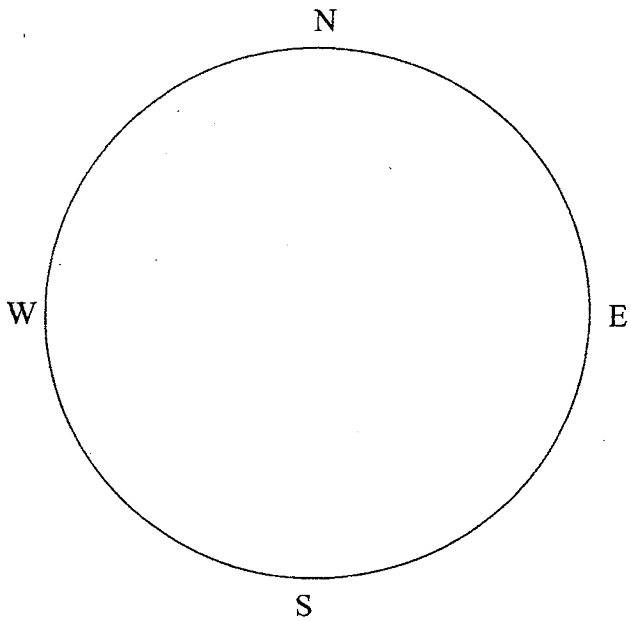
Wind Dir.: NE

Sky: 1

Temp: 54.3'F

Dominant (>50%) AES Habitat Type:

Other Habitats:



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
MALL	P	SW	70 m	—	0 m	//					
DCCO	F	[illegible]	[illegible]	NE	20 m	/					
COYE	P	NW	30 m	—	2 m	/					
SOSP	P	N	15 m	—	2 m	/					
CEDW	F	NE	var	W	10 m	///					
YWAR	P	E	25 m	—	5 m	//	//				
NOCA	P	SE	30 m	—	10 m	/					
RWBL	P	NW	10-25 m	—	1 m	///					
EUST	F	N	var	S/SE	var		///				
WAVI	P	E/NE	25 m	—	5 m		/				
SPSA	F/Fo	E/SE	20 m	var	1 m		/				
AMCR	P	NW	10 m	—	5 m		/				

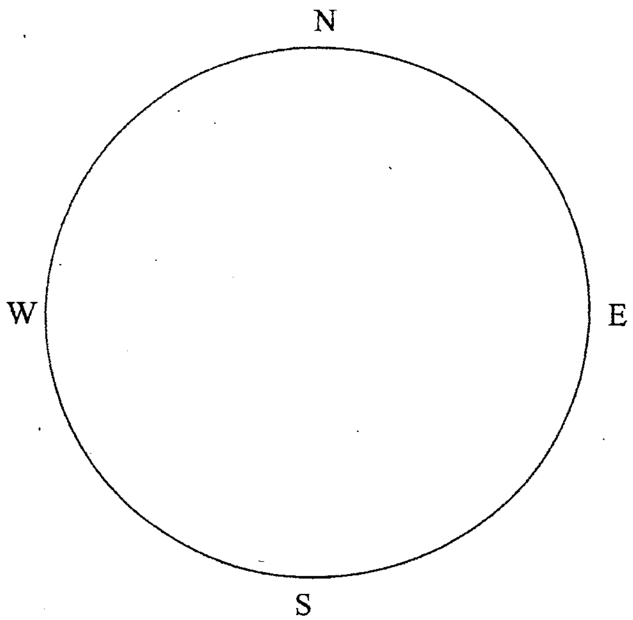
PASSERINE - Bird Point Count Data Sheet

BUFF RIV	BUFF 110 - Smith St
Project Name	Sample Point ID # & Name

6/15/12	8:17am	8:22am	
Date	Start Time	Stop Time	X coordinate, Y coordinate

NG	0	–	0	70.1°F	
Observer	Wind Spd.	Wind Dir.	Sky	Temp	Dominant (>50%) AES Habitat Type

Other Habitats ______________________



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
AMCR	P/Fo	SE	100m	–	0m	IIII					
RWBL	P	W/SW	10m	–	0m	III					
YWAR	P	NW	15m	–	1m	I					
SOSP	P	E/NE	20m	–	3m	I					
DCCO	P	E/SE	200m	–	1m	I					
CEDW	P	NW	20m	–	4m		I				
BARS	F	SW	50m	var	1m		I				
HOWR	P	W/NW	35m	–	2m		I				
COGR	F	N	15m	W	10m		I				
WAVI	P	W/NW	30m	–	3m		I				
											* 2 Green frogs
											on pond/wetland,
											did not see any
											turtles basking

PASSERINE - Bird Point Count Data Sheet

BUFF RIV
Project Name

BUFF RIV South St
Sample Point ID # & Name

6/27/12
Date

8:13 am
Start Time

8:18 am
Stop Time

X coordinate, Y coordinate

NG
Observer

2
Wind Spd.

W/NW
Wind Dir.

0
Sky

64°F
Temp

Dominant (>50%) AES Habitat Type

Other Habitats

N

W E

S

Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
SOSP	P	W	5m	—	3m	I	I				
MALL	P	E	75m	—	0m	IIII					
RWBL	O	NW	20m	—	1m	III					
CEDW	F	N	10m	SE	5m	I					
YWAR	P	NW	15m	—	2m	I	I				
GRCA	P	E	10m	—	1m	I					
SPSA	Fo	S	5m	—	0m		I				
REVI	P	N/NW	30m	—	4m		I				
											* 1 adult painted
											turtle basking
											on bank of
											wetland

PASSERINE - Bird Point Count Data Sheet

Project Name: ______ | Sample Point ID # & Name: BUF 110

8/24 Date | 0839 Start Time | 0844 Stop Time | X coordinate, Y coordinate: ______

Observer | 1 Wind Spd. | S Wind Dir. | 0 Sky | 67 Temp | Dominant (>50%) AES Habitat Type: ______

Other Habitats ______

N

W　　E

S

Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
INBU											2
AMGO											6
SOSP											2
GBHE											2
MALL											6
RBGU											14
CAGO											10 + 22
YWAR											1
COYE											2
HOWR											1
[illegible]											
[illegible]											
[illegible]											
MODO											6
BLJA											3
RWBL											~~||||~~ ||
BAWW											1
BTNW											1
HAWO											1
NOFL											1
WAVI											1
CEDW											5
REVI											2

PASSERINE - Bird Point Count Data Sheet

Project Name: [illegible]

Sample Point ID # & Name: BUF [illegible] – Bailey Woods ([illegible])

Date: [illegible]

Start Time: [illegible]

Stop Time: 1107

X coordinate, Y coordinate: 78.830083, 42.859927

Observer: [illegible]
MW

Wind Spd.: [illegible]

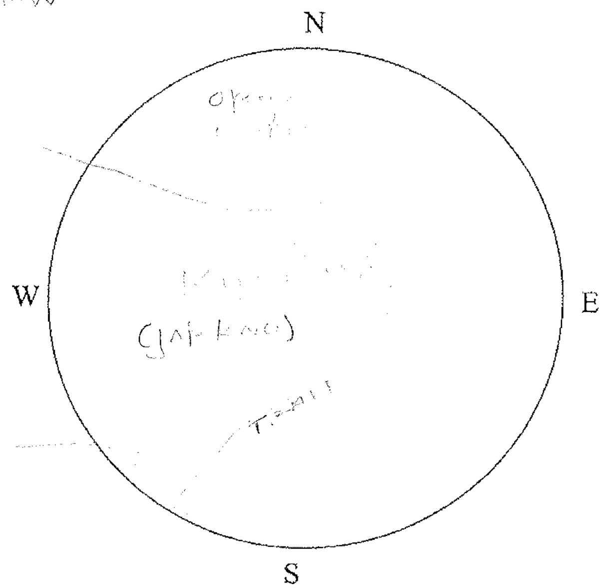
Wind Dir.: [illegible]

Sky: [illegible]

Temp: [illegible]

Dominant (>50%) AES Habitat Type: [illegible]

Other Habitats: Water / Developed



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
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Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
[illegible]	[illegible]	[illegible]	5			IIII II					
[illegible]	[illegible]	S	20			II					
	S	W	15			II					
	[illegible]	[illegible]	150			IIII					
[illegible]	[illegible]	S	[illegible]	N	[illegible]		IIII				
[illegible]	[illegible]	NW	100	[illegible]	[illegible]						
HECL	P/[illegible]	[illegible]	150	[illegible]	/		/				
WBNU	Fo	[illegible]	20	/	/		/				

[illegible]

PASSERINE - Bird Point Count Data Sheet

BNR
Project Name

BUF 112 Bailey Woods
Sample Point ID # & Name

1/[illegible]/12
Date

1200
Start Time

1210
Stop Time

X coordinate, Y coordinate

mjm
Observer

0-1
Wind Spd.

2
Wind Dir.

2
Sky

31
Temp

Dominant (>50%) AES Habitat Type

Other Habitats

N

W

E

S

Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes: stick nest
[illegible]
[illegible]
fox

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
DOWO	C	SE	[illegible]			I					
ATSP	C/P	S	20			IIII					
AMRO	?	SE	75				II				
RTHA	F	SE	200	N				I			

PASSERINE - Bird Point Count Data Sheet

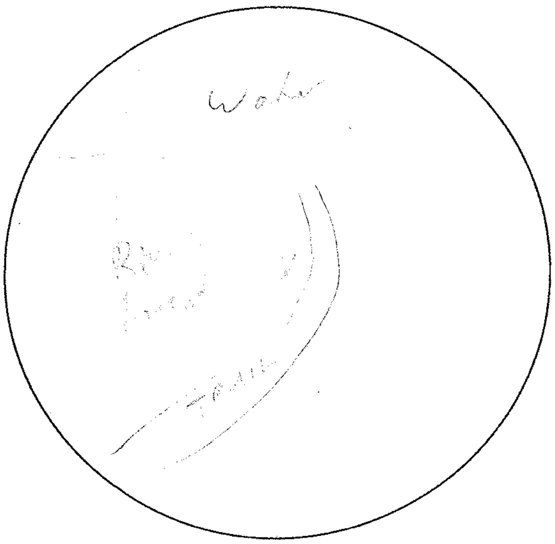
Project Name: BUF CR 1-35-3
Sample Point ID # & Name: BUF 112 - Bailey Woods

Date: 4/27/12
Start Time: 8:08 am
Stop Time: 8:18 am
X coordinate, Y coordinate: 78.830023, 42.859927

Observer: NG
Wind Spd.: 4-7 m
Wind Dir.:
Sky: 3
Temp: 36.5 °F
Dominant (>50%) AES Habitat Type: Riparian Forest

Other Habitats: Open Water / [illegible]

N

W  E

S

Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
AMGO	F		-		-	II					
RWBL	F		15 m		2 m	IIII					
MALL	P		40 m		0 m		I				O→
CAGO	P		100 m +				II				
AMCR	F		35 m		-		II	I			
AMRO	P		40 m		-			I			
ECAU	F		30-40 m					I			
											DEER TRACKS

PASSERINE - Bird Point Count Data Sheet

Project Name: ______ Sample Point ID # & Name: BUFF 112

Date: 5/10/17 Start Time: 7:37 am Stop Time: ______ X coordinate, Y coordinate: ______

Observer: NC/MM Wind Spd.: 1-2 Wind Dir.: ______ Sky: 2-3 Temp: ______ Dominant (>50%) AES Habitat Type: ______

Other Habitats ______

N

W E

S

Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
YEWA	P/C		5m		0m	IIII					
GRCA	P		10m		2m	I					
HOWR	P/C		30m		–	I					
AMRO	[illegible]		[illegible]		[illegible]	I					
[illegible]						I	[illegible]				
[illegible]	[illegible]		VO		0m		IIII				
NRWS	[illegible]		[illegible]		[illegible]		I				
[illegible]	[illegible]		[illegible]		[illegible]		[illegible]				
CHIE	P/C		75m		[illegible]			II			
MODO	[illegible]		[illegible]		[illegible]			I			
CHSW	F		VO		VO			I			
											Mark Curtis - Potential

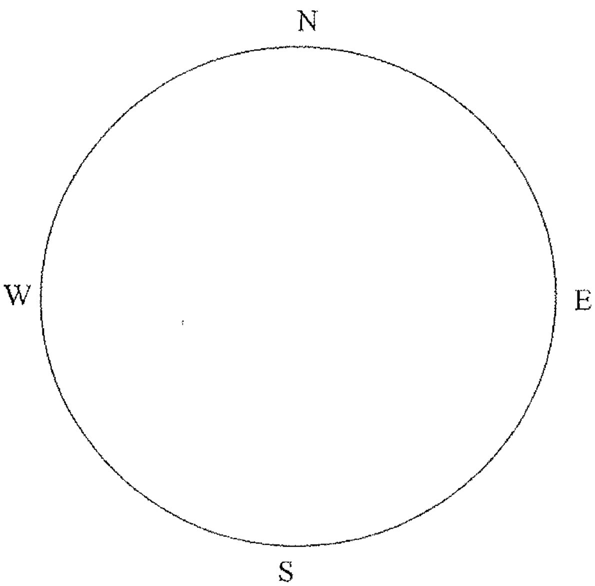
PASSERINE - Bird Point Count Data Sheet

Project Name:	Sample Point ID # & Name: Bailey Woods #2

Date: 5/21/12 Start Time: 0700 Stop Time: X coordinate, Y coordinate:

Observer: [illegible] Wind Spd.: 0 Wind Dir.: – Sky: [illegible] Temp: 61 Dominant (>50%) AES Habitat Type:

Other Habitats:



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
[illegible]	[illegible]	[illegible]				1					
[illegible]	[illegible]	W				1					
[illegible]	[illegible]	NW				1					
[illegible]	[illegible]	S				1					
[illegible]		E	50			1					
MAWA	[illegible]	SW	75			III					
[illegible]	[illegible]	W				1					
[illegible]	[illegible]	[illegible]	[illegible]			1					
[illegible]			[illegible]			1					
[illegible]	C/Fo	E	[illegible]				III				
[illegible]	C/Fo	[illegible]	[illegible]				II				
[illegible]		S	40				1				
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	20 →					[illegible]
	C	SW	[illegible]				1				
BHVI	C/Fo	SE	75					1			
TRES	Fo	N	40	[illegible]			IIII				
[illegible]	[illegible]	N	[illegible]					1			
[illegible]	[illegible]	[illegible]	[illegible]					10			
[illegible]	[illegible]	N	150				III				
YWAR	C	E	5				1				
[illegible]	C	N	200					1			[illegible]
[illegible]		N	50					III			
[illegible]		[illegible]	75					1			
BEKI	F	N	50	E	5			1			(male)
COHA	[illegible]/C	E	50	E	10			1			a dull male
[illegible]	[illegible]	S	5								[illegible]
[illegible]	[illegible]	[illegible]	100					1			
[illegible]	[illegible]		100					1			

PASSERINE - Bird Point Count Data Sheet

BUF RIV
Project Name

BUFF 112 - Bailey Woods
Sample Point ID # & Name

6/5/12
Date

6:47 am
Start Time

6:52 am
Stop Time

X coordinate, Y coordinate

NG
Observer

1
Wind Spd.

NE
Wind Dir.

0
Sky

53.6°F
Temp

Dominant (>50%) AES Habitat Type

Other Habitats

N

W

E

S

Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
WAVI	P	W	30m	—	2m	1					
HOWR	P	W	20m	—	2m	1					
RBGR	F	N	var	S	var	111	11				
EUST	P	SW	10m	—	3m	1					
YWAR	P	NE	40m	—	—	11					
BCCH	P	NE	50m	—	2m	1	1				
AMGO	F	SW	15m	var	10m	11	1				
CARW	P	E	70m	—	3m		1				
GRCA	P	SW	5m	—	5m	1					

PASSERINE - Bird Point Count Data Sheet

Project Name: BUFF RU

Sample Point ID # & Name: BUFF 112 - Big Woods

Date: 6/15/12

Start Time: 6:50

Stop Time: 6:55

X coordinate, Y coordinate:

Observer: NG

Wind Spd.: 0

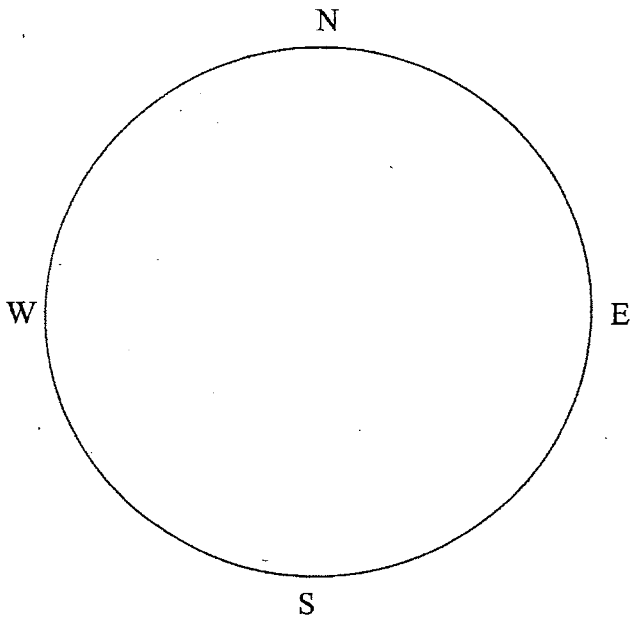
Wind Dir.: –

Sky: 0

Temp: 52.1°F

Dominant (>50%) AES Habitat Type:

Other Habitats:



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
YWAR	?	W + E	20m	–	2m	II					
AMCR	P	W	60m	–	10m	I					
RBWO	F	var	var	W,E,S	var	IIII	I				
NOCA	P	N	45m	–	10m	I					
COYE	?	SE	30m	–	2m	I					
GRCA	P	W	15m	–	5m		I				
BEKI	Fo/F	N	20m	W,E	2m		I				

PASSERINE - Bird Point Count Data Sheet

Project Name: BUFF RIV

Sample Point ID # & Name: BUFF 112 – Bailey Woods

Date: 6/27/12

Start Time: 6:49 am

Stop Time: 6:54 am

X coordinate, Y coordinate:

Observer: NG

Wind Spd.: 1

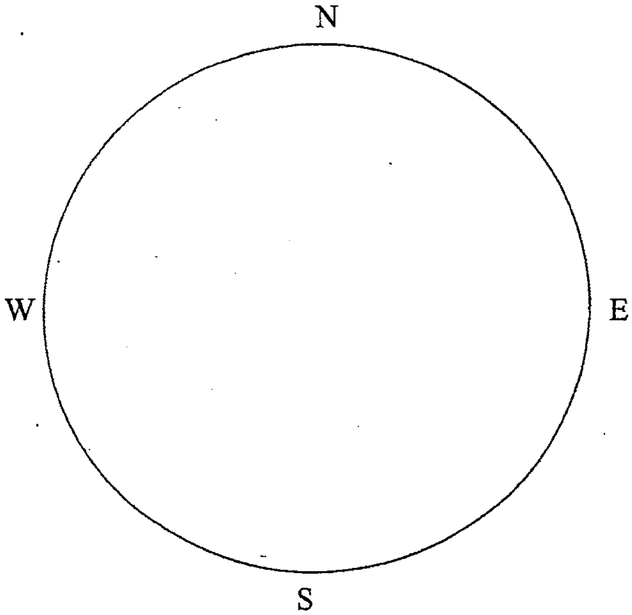
Wind Dir.: WNW

Sky: 0

Temp: 60.6°F

Dominant (>50%) AES Habitat Type:

Other Habitats:



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
GRCA	P	W	15m	–	2m	I					
NOCA	P	W	10m	–	4m	I					
EUST	P	S	20m	–	0m	III					
YWAR	P	SE	25m	–	2m	II					
SOSP	P	S/SE	30m	–	3m	I					
CEDW	F	N/E	20m	W	5m	II	I				
RBGO	F	N	Vm	W, E	20-30m	I	III				

PASSERINE - Bird Point Count Data Sheet

Project Name:

Sample Point ID # & Name: BMF 112 Bailey Woods

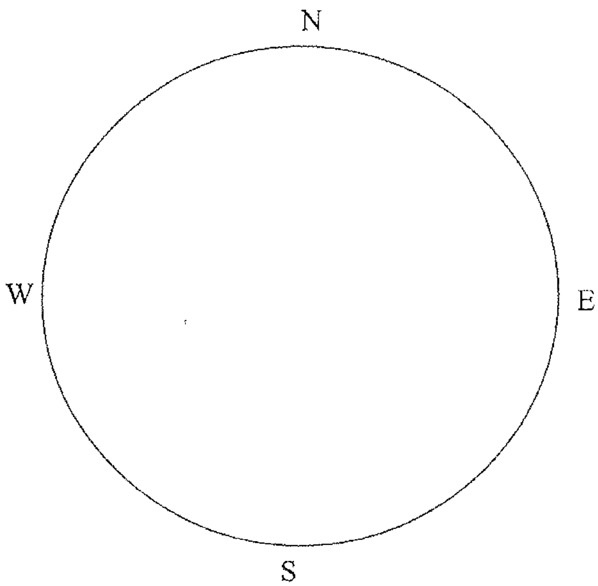
Date: 8/24/12 | Start Time: 0726 | Stop Time: 0731

X coordinate, Y coordinate:

Observer: | Wind Spd.: | Wind Dir.: | Sky: 25 | Temp: 65

Dominant (>50%) AES Habitat Type:

Other Habitats:



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

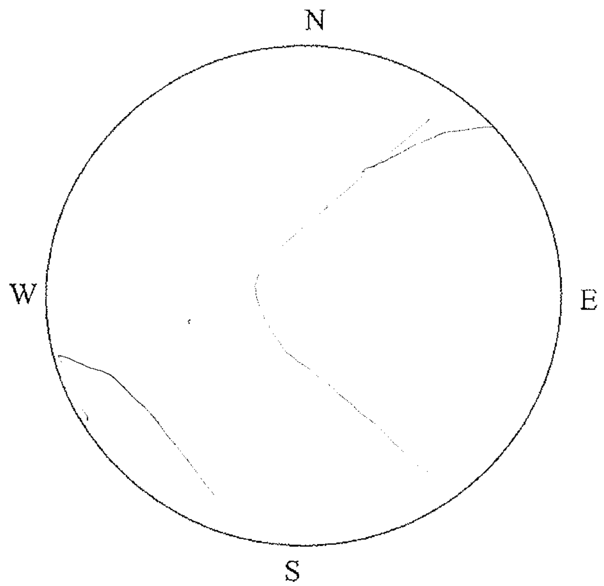
Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
[illegible]											
BCCH											
YWAR											
INBU											
TWT											
WBNU											
BRCR											
SOSP											
MODO											
WAVI											
GRCA											
CBDW											
NOCA											
RBWO											
RBGR											
CASO											

PASSERINE - Bird Point Count Data Sheet

[illegible]	[illegible]
Project Name	Sample Point ID # & Name
11/22 [illegible]	1120
Date	Start Time
1130	78.826346 , 42.861237
Stop Time	X coordinate, Y coordinate

[illegible]	[illegible]	[illegible]	[illegible]	4°	[illegible]
Observer	Wind Spd.	Wind Dir.	Sky	Temp	Dominant (>50%) AES Habitat Type

Other Habitats [illegible]



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
[illegible]	[illegible]			[illegible]		[illegible]					
[illegible]	[illegible]	[illegible]	100	/	/	||					
[illegible]	[illegible]	[illegible]	100	[illegible]	[illegible]	|||					
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	10	||					
[illegible]	P	SE	75	/	/	|||| |||					
[illegible]	[illegible]	[illegible]	[illegible]		/			|||			
	[illegible]	[illegible]		[illegible]	/						
			[illegible]	/	/			||		
[illegible]	[illegible]	[illegible]	75	/	/			|||| ||			

PASSERINE - Bird Point Count Data Sheet

BNR
Project Name

Buf 113 Bain Peninsula
Sample Point ID # & Name

1/22/12
Date

1228
Start Time

1238
Stop Time

X coordinate, Y coordinate

mpm
Observer

0-1
Wind Spd.

NE
Wind Dir.

3
Sky

32
Temp

Open Water
Dominant (>50%) AES Habitat Type

Other Habitats Pine ... Developed

N

W E

S

Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:
BEARS
rabbit
sm mammal
squirrel
fox

☆sewage odor☆

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
DOWO	Fo	ES 2	100	/	/	1					
NOCA	C/P	ES 2	100	/	/	1					

PASSERINE - Bird Point Count Data Sheet

Project Name: BUF RIV [illegible]

Sample Point ID # & Name: BUF 113 - Bailey Peninsula

Date: 4/27/12

Start Time: 7:39 am

Stop Time: 7:49 am

X coordinate, Y coordinate: 78.82646, 42.[illegible]

Observer: NG

Wind Spd.: 4.1 mph

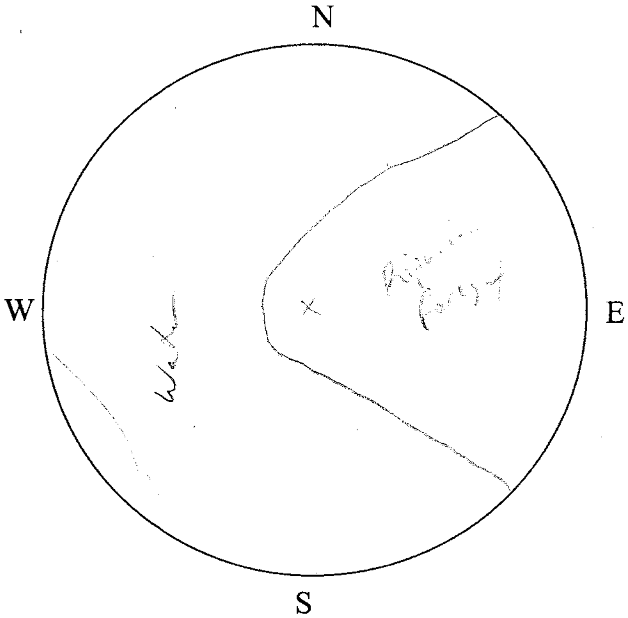
Wind Dir.:

Sky: 3

Temp: 36.9 °F

Dominant (>50%) AES Habitat Type: Riparian Forest

Other Habitats: Open water / [illegible]



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
EUST	P		10m		3m	I					
BEKI	F		75m		2m	I					Kingfisher
NOCA	[illegible]		[illegible]		—	I					
RWBL	F		25m-100m		[illegible]		III	II			
SPSA	F		[illegible]		1m			I			Flew away from bank
CAGO	F		45m		25m			II			
EUST	P/F		—					III			
AMGO	F		25m		20m			I			
SOSP	Fo		10m		3m			II			

PASSERINE - Bird Point Count Data Sheet

[illegible]/BUF AOC
Project Name

Buf 113
Sample Point ID # & Name

[illegible] | 0713 | [illegible]
Date | Start Time | Stop Time

X coordinate, Y coordinate

[illegible] | [illegible] | [illegible] | [illegible] | [illegible]
Observer | Wind Spd. | Wind Dir | Sky | Temp

Dominant (>50%) AES Habitat Type

Other Habitats

N

W

E

S

Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
[illegible]	[illegible]	[illegible]	[illegible]			[illegible]					
[illegible]	[illegible]	[illegible]	[illegible]			[illegible]					
[illegible]	[illegible]	N	20			[illegible]					
[illegible]	[illegible]	[illegible]	[illegible]			1					
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]					
[illegible]	[illegible]	[illegible]	[illegible]								
[illegible]	[illegible]	E	75			[illegible]					
[illegible]	[illegible]	N	[illegible]	[illegible]	VAR	[illegible]					[illegible]
[illegible]	[illegible]	SW	25			1					(Pair)
[illegible]	[illegible]	[illegible]	[illegible]			1					
[illegible]	[illegible]	[illegible]	[illegible]								[illegible]
[illegible]	[illegible]	[illegible]	[illegible]								
[illegible]	[illegible]	[illegible]	[illegible]				[illegible]				
[illegible]	G	S	40				1				
[illegible]	[illegible]	[illegible]	[illegible]				1				
[illegible]			[illegible]				1				[illegible]
[illegible]	F	N	100	W	20			1			
[illegible]	[illegible]	N	[illegible]					1			
[illegible]	[illegible]	N	[illegible]					11			
[illegible]	[illegible]	NE	[illegible]					1			
[illegible]	[illegible]	NE	275					1			
NOCA	[illegible]	[illegible]	[illegible]					1			

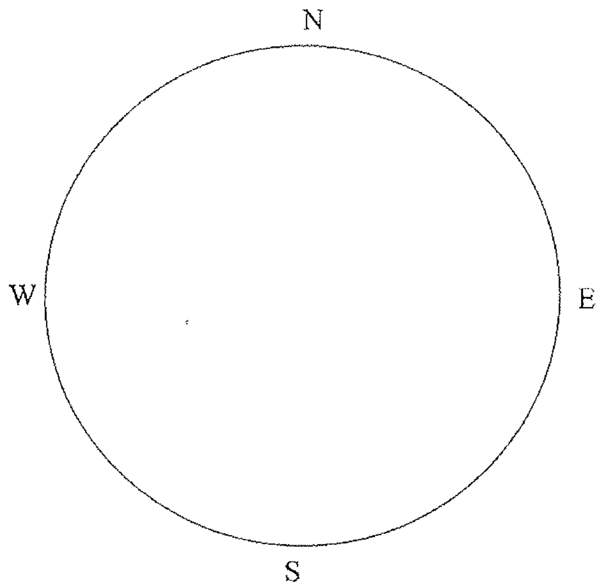
PASSERINE - Bird Point Count Data Sheet

[illegible]	[illegible] 113 [illegible]
Project Name	Sample Point ID # & Name

5/11/12	[illegible]	0940	
Date	Start Time	Stop Time	X coordinate, Y coordinate

[illegible]	1	W	0	64°	
Observer	Wind Spd.	Wind Dir.	Sky	Temp	Dominant (>50%) AES Habitat Type

Other Habitats________________________



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
[illegible]		[illegible]				1					
[illegible]		E				1					
[illegible]	[illegible]	E				III					
[illegible]	P	E				1					
[illegible]	[illegible]	S	150			1					
[illegible]	F	W	[illegible]	[illegible]	[illegible]	[illegible]					
[illegible]	[illegible]	[illegible]	[illegible]			[illegible]					
[illegible]	[illegible]	[illegible]				[illegible]					
[illegible]		[illegible]					[illegible]				
[illegible]		[illegible]					[illegible]				
[illegible]	1	W	[illegible]				[illegible]				
[illegible]	P	W	[illegible]				[illegible]				
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	10			[illegible]			
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]			
[illegible]	1	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]			
[illegible]	[illegible]	[illegible]	[illegible]					1			
UAVI	C	E	75					[illegible]			
[illegible]	S	N	200	VAR	100			[illegible]			

Returned [illegible] Aug [illegible]
see back

PASSERINE - Bird Point Count Data Sheet

Project Name: BVF RIV

Sample Point ID # & Name: BUFF 113 – Bairey Pe[illegible]

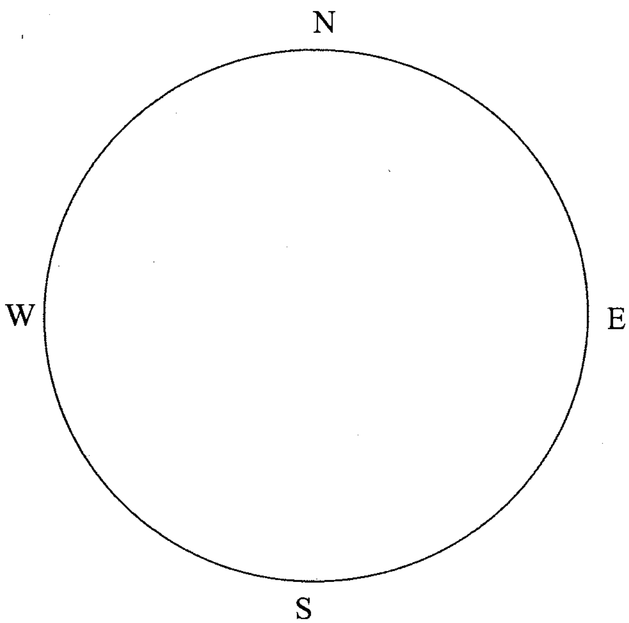
Date: 6/5/12 | Start Time: 6:28 am | Stop Time: 6:33 am

X coordinate, Y coordinate:

Observer: [illegible] | Wind Spd.: 2 | Wind Dir.: NE | Sky: 1 | Temp: 53.1°F

Dominant (>50%) AES Habitat Type:

Other Habitats:



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
YWAR	P	E	15m	—	3m	II	II				
BACR	P	N	60m	—	5m	I					
EUST	P	Var	Var	—	Var	II	II				
RBGU	F	Var	Var	Var	30+m	III					
MALL	F	W	30m	E	3m	I	I				
WIFL	P	N	50m	—	3m		II				
SOSP	P	E	[illegible]	—	1m		I				
CEDW	F	E	Var	W	10m		III				
CAGO	P	E	30m	—	0m		IIIII I				2 adults, 4 young

PASSERINE - Bird Point Count Data Sheet

Project Name: Buff. BIV
Sample Point ID # & Name: BUFF 113 - [illegible]
Date: 6/15/12
Start Time: 6:24 am
Stop Time: 6:29 am
X coordinate, Y coordinate:
Observer: [illegible]
Wind Spd.: 0
Wind Dir.: —
Sky: 0
Temp: 57.3°
Dominant (>50%) AES Habitat Type:
Other Habitats:

N

W E

S

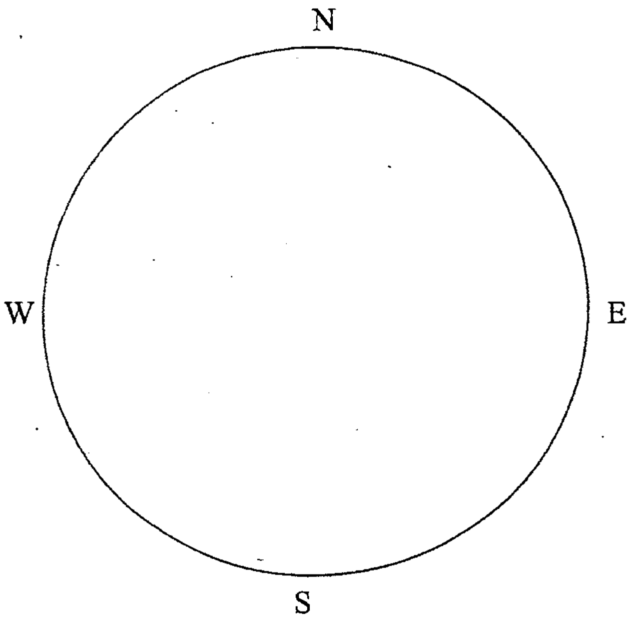
Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
[illegible]	P	S	25 m	—	2 m	I	I				
YWAR	P	NE	45 m	—	3 m	II					
NOCA	P	E/SE	50 m	—	5 m	I	I				
AMCR	P	W/NW	75 m	—	20 m	I	I				
RBGU	F	E	40 m	W	60 m	~~IIII~~	I				
TRSW	F	N	20 m	W	25 m		II				
EUST	P	N	55 m	—	5 m		III				

PASSERINE - Bird Point Count Data Sheet

Project Name: BUFF 2012	Sample Point ID # & Name: BUFF 113 - Baily Peninsula
Date: 6/27/12	Start Time: 6:27am
Stop Time: 6:37am	X coordinate, Y coordinate:
Observer: NG	Wind Spd.: 1
Wind Dir.: W/NW	Sky: 0
Temp: 68.1°F	Dominant (>50%) AES Habitat Type:
Other Habitats:	



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
HOWR	P	SW-W	40-50m	–	1m	II					
GRCA	P	E	5m	–	2m	I	I				
BEKI	F/Fo	N	40m	W	1m	I					
YWAR	P	NE	50m	–	2m	II					
MALL	P	W	100m	–	0m	I	I				
DCCO	F	W	20m	E	5m		I				
RBGU	F	W,S,N	var	E,N	var	II	III				

PASSERINE - Bird Point Count Data Sheet

Project Name ______ Sample Point ID # & Name 113

Date 8/24/12 Start Time 0617 Stop Time 0622 X coordinate, Y coordinate ______

Observer ______ Wind Spd. – Wind Dir. S Sky SD Temp 62 Dominant (>50%) AES Habitat Type ______

Other Habitats ______

N

W E

S

Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
DOWO					II						
BEKI					I						
BCCH					IIII						
TUTI					III						
SOSP					III	II					
MALL					II	I					
AMCR					II						
CEDW						~~IIII~~ I					
GCFL						I					
TRES						IIII					
YWAR						I					
AMRO						III					

PASSERINE - Bird Point Count Data Sheet

Project Name: [illegible]

Sample Point ID # & Name: [illegible]

Date: [illegible]

Start Time: 1133

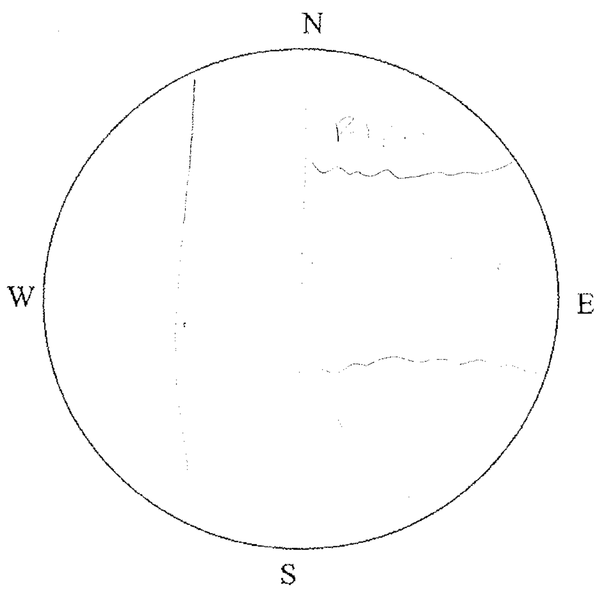
Stop Time: 1143

X coordinate, Y coordinate: 78.825012, 42.860345

Observer: ______ Wind Spd. ______ Wind Dir. ______ Sky ______ Temp ______

Dominant (>50%) AES Habitat Type: ______

Other Habitats: ______



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes

PASSERINE - Bird Point Count Data Sheet

BNR
Project Name

Buf 114 Baily - Rd.
Sample Point ID # & Name

1/21/12
Date

1216
Start Time

1226
Stop Time

X coordinate, Y coordinate

MM
Observer

0-1
Wind Spd.

NE
Wind Dir.

2
Sky
(Hazy)

34
Temp

Dominant (>50%) AES Habitat Type

Other Habitats

N

W

E

S

Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes: small mammal tracks w/ tail drag on way to 113

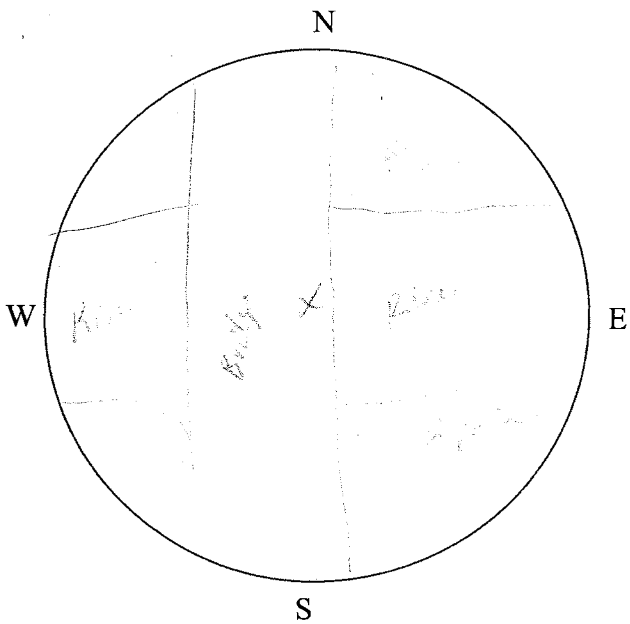
Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
HOSP	P/F	ENE	200m	S	15m	HHT HHT III		HHT			
RBWO	F	ENE	200m	S	20m	I					
AMCR	F	W	KM+	N	100		I				

PASSERINE - Bird Point Count Data Sheet

BUF [illegible] | BUF 114 - Bailey St Bridge
Project Name | Sample Point ID # & Name

[illegible] | [illegible] | [illegible] | 78.825012, 42.860345
Date | Start Time | Stop Time | X coordinate, Y coordinate

[illegible] | [illegible] | | 3 | 27.1°C | Open Water
Observer | Wind Spd. | Wind Dir. | Sky | Temp | Dominant (>50%) AES Habitat Type



Other Habitats Developed / Riparian

Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
NOCA	P		25m		2m	1					♀
[illegible]	P/F		[illegible]		[illegible]			1			
AMRO	P		15m		1m	1					
RBGU	F		—		—	11	11	1			

PASSERINE - Bird Point Count Data Sheet

Project Name:

Sample Point ID # & Name: BUFF 114

Date: 5/10/12 | Start Time: [illegible] | Stop Time: 7:29 a

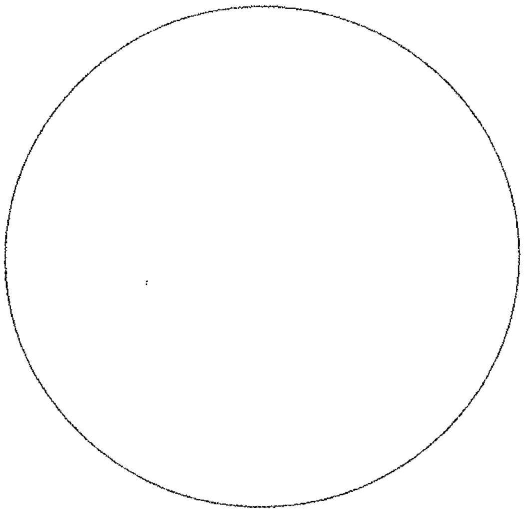
X coordinate, Y coordinate:

Observer: [illegible] | Wind Spd. 1 2 | Wind Dir. | Sky 2 | Temp [illegible] °F

Dominant (>50%) AES Habitat Type:

Other Habitats:

N

W  E

S

Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
[illegible]	P/C	S	75m	—	—	/					
[illegible]	P/C	S	50m	—	—	/ +					
RBGU	P/F	N	Var	N	Var	~~////~~ /	//	~~////~~			
MOLL	P	S	60m	-	0m	/		/			
TRES	P	E	250m	E	Var	?					
[illegible]	F	E	30m	—	Var	//	////				
WAVI	P/C	N	30m	—	2m						
GRCA	P	NE	75m	—	—		/				
BHCO	F	W	5m	S	—		/				
RODO	F	E	25m	S	—		///	//			
EUST	F	N	Var	E	Var		//				
HOSP	F	N	Var	W	Var						
AMCR	F	N	50m	E	Var			/			
DCCO	F	S	Var	N	75m			~~////~~ /			
											Noise: [illegible]

PASSERINE - Bird Point Count Data Sheet

114

Project Name: ______ Sample Point ID # & Name: 114

Date: ______ Start Time: ______ Stop Time: ______ X coordinate, Y coordinate: ______

Observer: ______ Wind Spd.: ______ Wind Dir.: ______ Sky: ______ Temp: ______ Dominant (>50%) AES Habitat Type: ______

Other Habitats: ______

N

W E

S

Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
HOSP	F/					6+					
TUVU	S	N				IIII +I					
EUST	F					IIII					
MODO	P					II					
YWBR						I					[illegible]
AMGO	C/F	NE	75	S	20		IIII I				
YRWA	Fo	ENE	150					I			
FBSH	F/C	N	250	var	100	IIII IIII I					
FBSH	F/C	S	400	var	500		22				
RWBL	C	NW	200					I			
BTNW	F/C	NW	300					III			
GRCA	C	NW	300					I			

PASSERINE - Bird Point Count Data Sheet

Project Name: BUFF RIV
Sample Point ID # & Name: BUFF 114 - Bailey Bridge

Date: 6/5/12
Start Time: 6:36 am
Stop Time: 6:41 am
X coordinate, Y coordinate:

Observer: NG
Wind Spd.: 1
Wind Dir.: NE
Sky: 1
Temp: 53.2°F
Dominant (>50%) AES Habitat Type:

Other Habitats:

N

W E

S

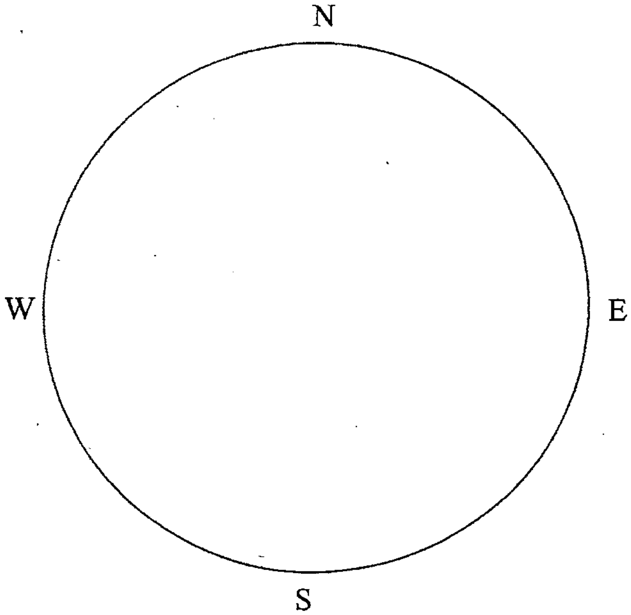
Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
YWAR	P	E	15m	—	2m	I					
AMRO	P	E	40m	—	3m	I					
RBGU	F	E	var	var	25m	I ~~IIII~~	III				
HOSP	P	E	15m	—	5m	III					
HOWR	P	E	35m	—	—		I				
BEKI	Fo	E	60m	—	1m		I				
CEDW	F	S	15m	N	10m		II				

PASSERINE - Bird Point Count Data Sheet

Project Name: BUFF RIV	Sample Point ID # & Name: BUFF 114 – [illegible] Bridge
Date: 6/15/12	Start Time: 6:32 am
Stop Time: 6:37 am	X coordinate, Y coordinate:
Observer: NG	Wind Spd.: 0
Wind Dir.: –	Sky: 0
Temp: 57.4°F	Dominant (>50%) AES Habitat Type:
Other Habitats:	



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
RBGU	F	E	100+m	S	70m	1 ~~||||~~					
AMGO	P	E	20m	—	20m	1					
MALL	P	E	25m	–	0m	1					
TRSW	Fo/F	W	15m	E	25m	1					
YWAR	P	E/NE	20m	—	5m		1				
EAPH	F	E	var	W	5m		1				
											* Difficult to hear,
											lots of traffic.

PASSERINE - Bird Point Count Data Sheet

Project Name: BUFF RIV

Sample Point ID # & Name: BVFF 114 - Baily Bridge

Date: 6/27/17 | Start Time: 6:36 am | Stop Time: 6:41 am

X coordinate, Y coordinate:

Observer: NG | Wind Spd.: 1 | Wind Dir.: W/NW | Sky: 0 | Temp: 60.2°F

Dominant (>50%) AES Habitat Type:

Other Habitats:

N

W E

S

Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
RODO	P	S	5m	—	3m	1					
GRCA	P	SW	10m	—	2m	1					
RBGU	F	W	100m	E,N	40m	III	II				
EAPH	P	SW	15m	—	5m		1				
NOCA	F	W	35m	S	4m		1				
											* Traffic → NOISEY

PASSERINE - Bird Point Count Data Sheet

______________________ Project Name

114 Sample Point ID # & Name

8/24/12 Date

0610 Start Time

0615 Stop Time

______________________ X coordinate, Y coordinate

Mo Observer

1 Wind Spd.

S Wind Dir.

50% Sky

62° Temp

______________________ Dominant (>50%) AES Habitat Type

Other Habitats ______________________

N

W E

S

Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	# ~~Ht. (ft or m)~~	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
HOWR					1	/					
HOSP					7	/					
HOFI					IIII	/					
SOSP					1	/					
MACL					II		/				
CAEG					~~IIII~~ I		/				

PASSERINE - Bird Point Count Data Sheet

[illegible]
Project Name

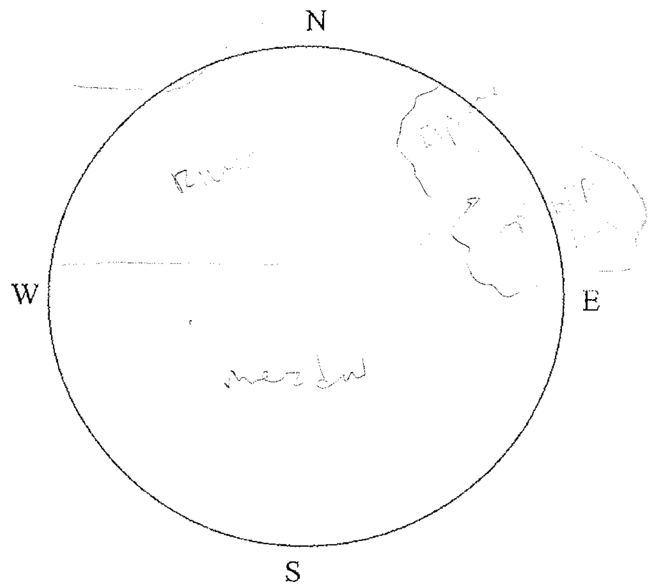
[illegible] West
Sample Point ID # & Name

Date	Start Time	Stop Time	X coordinate, Y coordinate
[illegible]	1145	1155	78.820265, 42.863729

Observer	Wind Spd.	Wind Dir.	Sky	Temp
[illegible]	10-15	E	[illegible]	

Dominant (>50%) AES Habitat Type [illegible]

Other Habitats [illegible] Forest



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
AMCR	[illegible]	[illegible]	NE								
[illegible]	[illegible]		[illegible]			[illegible]					
[illegible]		N	100	SW	30		I				
[illegible]		[illegible]	[illegible]				[illegible]				
[illegible]	P	W	120	—	—		[illegible]				
[illegible]	F/P	N	75	NE	5			I			

PASSERINE - Bird Point Count Data Sheet

Project Name: BNR

Sample Point ID # & Name: Buf 113 (several Bluffs entrance)

Date: 1/22/17

Start Time: 1243

Stop Time: 1253

X coordinate, Y coordinate:

Observer: [illegible]

Wind Spd.: 0

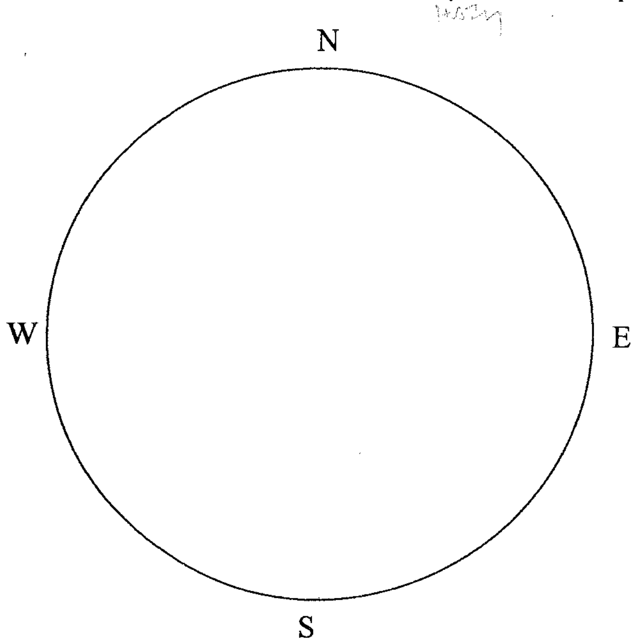
Wind Dir.: -

Sky: 2-3 hazy

Temp: 35

Dominant (>50%) AES Habitat Type: Openwater / Barren Land

Other Habitats: Developed / Open Wetland



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes: House Cat / Feral
Squirrels
cottontail rabbit

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
ATSP	Fo	NW	5	/	/	4H					
LMCR	P/c	E	150			1					
EUST	P	N	500				55+				
ROPI	F	N	400	VAR	30			12			
[illegible]	Fo/P	NE	250					1			

PASSERINE - Bird Point Count Data Sheet

BNR LBC AGC 11-0243
Project Name

Bluff 115 (Seneca Bluffs
Sample Point ID # & Name

1/23/12
Date

Start Time

Stop Time

X coordinate, Y coordinate

MW, SH
Observer

0-1
Wind Spd.

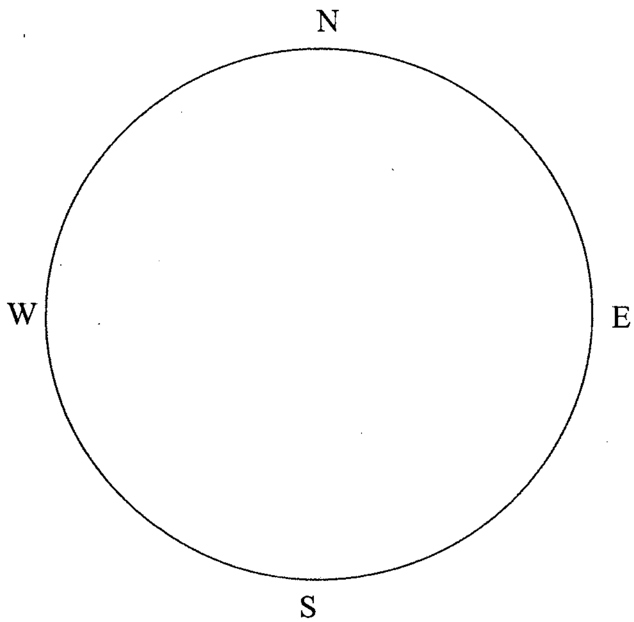
NW
Wind Dir.

3
Sky

25
Temp

Dominant (>50%) AES Habitat Type

Other Habitats



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes: lg crow roost to the north (or - being pushed by storm?
* going to rain soon!
- gull/g [illegible]

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes

PASSERINE - Bird Point Count Data Sheet

BUF [illegible]
Project Name

BUF 115 - Seneca Bluffs West
Sample Point ID # & Name

4/27/12
Date

7:19 am
Start Time

7:29 am
Stop Time

78.820265, 42.863729
X coordinate, Y coordinate

NG
Observer

4.8 mph
Wind Spd.

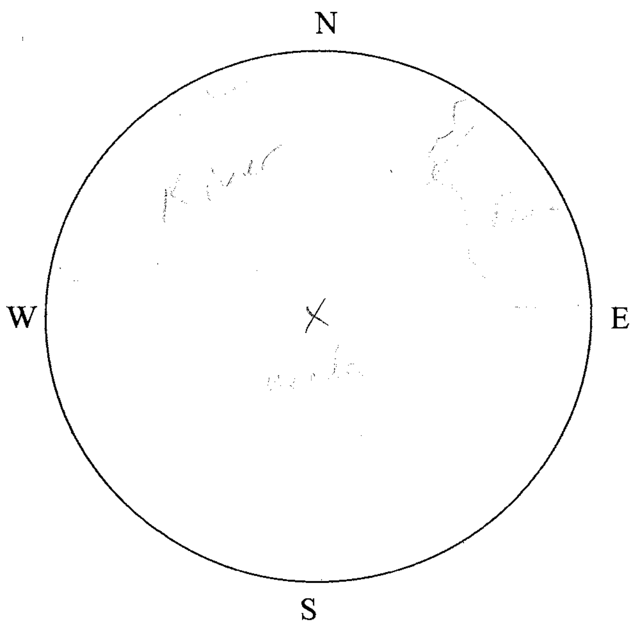
Wind Dir.

3
Sky

36.8°F
Temp

Grassland (mowed)
Dominant (>50%) AES Habitat Type

Other Habitats Open water / River



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
NOCA	P		25m		10m	I					
SOSP	Fo		10m		0m	II					
AMCR	F		20m			I					
RBGU	F		–			IIII					
CAGO	P		30m-100m		0m	I	I				
RWBL	P/F		10m-50m		3-7m		II				
AMGO	F		–				II				
AMRO	Fo		5m		0m		I				
MALL	P		90m		0m			I			

PASSERINE - Bird Point Count Data Sheet

Project Name: BNR - PMF

Sample Point ID # & Name: ...F-115

Date: 5/10/12

Start Time: 0530

Stop Time: 0600

X coordinate, Y coordinate:

Observer: KMAS

Wind Spd.: 1-2

Wind Dir.: W

Sky: 3

Temp: 43

Dominant (>50%) AES Habitat Type:

Other Habitats:

N

W

E

S

Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

74

3

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
YWAR	C	N	10	—		1					
BEKI	F	NE	200	N	3	1					
RBGU	F	N	20	E	20	~~IIII IIII~~ IIII	→				27 + 5 + 17 + 7 + 22
CAGO	P	NW	250			11		1			
RWBL	C	NE	100			1					
GRCA	C	NE	50			11					
CHSP	C	SE	100			1					
NOFA	C	NNE	60				11				
WAVI	C	NE	75				1				
HOWR	C	NNW	250	—	—		1				✓
AMWO	Fo	NW	75					111			
WODU	P	N	200					111			3 white ducks, likely
AMRO	F	E	30					11			

Am Beaver

* AMSO 3+

PASSERINE - Bird Point Count Data Sheet

BUF/BNR WS
Project Name

BUF 115 Seneca Bluffs entrance (NW
Sample Point ID # & Name

5/11/12
Date

1030
Start Time

1040
Stop Time

X coordinate, Y coordinate

MxM
Observer

1
Wind Spd.

W
Wind Dir.

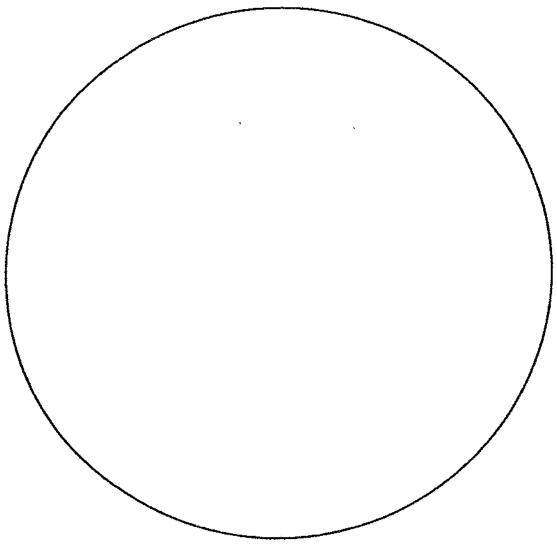
0
Sky

65°
Temp

Dominant (>50%) AES Habitat Type

Other Habitats

N

W  E

S

Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
AMRO						II					
INBU						I					
NRWS						6					
RWBL						II	I				
YWAR						I	I				
ROPI						5					
RBGU						IIII III	IIII				
CAGO							IIII I				
GBHE							I				
GBHE							II				
BARS							III				
WAVI							I				
BLJA							II	III			
HOWR								I			
COGR								IIII			
CHSP								I			
CEWA								I			

PASSERINE - Bird Point Count Data Sheet

BUF RW
Project Name

BUFF 15
Sample Point ID # & Name

[illegible]
Date

6:[illegible]
Start Time

[illegible]
Stop Time

X coordinate, Y coordinate

NG
Observer

2
Wind Spd.

NE
Wind Dir.

2
Sky

52.9°F
Temp

Dominant (>50%) AES Habitat Type

Other Habitats

N

W

E

S

Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
CAGO	P	W	30 m	[illegible]	[illegible]	~~IIII~~					
MALL	P	NW	[illegible]		[illegible]	~~IIII~~					
WODU	P	NW	[illegible]	–	[illegible]	I					
YWAR	P	NE	[illegible]	–	2 m	I	I				
SOSP	P	SE	15 m	–	2 m	I					
AMRO	[illegible]	SE	30 m	–	–		I				
RBGU	F	var	var	var	var	II	~~IIII~~ I				
EUST	P	var	var	–	var	I	III				
COGR	F	E/NE	var	S	var		III				
CEDW	F	E	15 m	S	15 m		III				

PASSERINE - Bird Point Count Data Sheet

BUFF RIV
Project Name

BUFF 115 - Seneca Bluffs
Sample Point ID # & Name

Date	Start Time	Stop Time
6/15/02	6:08 am	6:13 am

X coordinate, Y coordinate

Observer	Wind Spd.	Wind Dir.	Sky	Temp
NG	0	–	0	56.7°F

Dominant (>50%) AES Habitat Type

Other Habitats

N

W E

S

Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
SOSP	P	NW	50 m	–	2 m	||					
CEDW	P	NE	10 m	–	15 m	||					
CROW	F	E	100 m	S	75 m	|||	||				
EUST	P	E	75 m	—	Var	||||	|||				
YWAR	P	W	50 m	—	1 m	|					
MODO	?	E	75 m	—	—	|					
AMRO	Fo	S	15 m	–	0 m		|				
RODO	Fo/F	S	25 m	—	0 m		||||				
NRSW	Fo	W	25 m	–	10 m		|				
											*6 Black duck on
											River [illegible]
											[illegible]

PASSERINE - Bird Point Count Data Sheet

BUFF RIV
Project Name

BUFF 115 - Seneca [illegible]
Sample Point ID # & Name

6/27/12
Date

5:47 am
Start Time

5:52 am
Stop Time

X coordinate, Y coordinate

NG
Observer

1
Wind Spd.

W/NW
Wind Dir.

0
Sky

59.3°F
Temp

Dominant (>50%) AES Habitat Type

Other Habitats

N

W

E

S

Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
CAGO	P	N	100m	—	0m	~~IIII~~ I					
MALL	P	N/NE	75m	—	0m	~~IIII~~					
GRCA	P	S	5m	—	2m	I					
YWAR	P	W/NW	55m	—	2m	I					
SOSP	P	E	30m	—	1m	I					
RBGU	F	N	Var	W, N	75m	~~IIII~~	II				
EUST	P	SW	50m	—	5m		II				
AMGO	F	S/SW	25m	W	10m		II				

PASSERINE - Bird Point Count Data Sheet

Project Name: ______________________

Sample Point ID # & Name: 115

Date: 8/24/12 Start Time: 0705 Stop Time: 0710

X coordinate, Y coordinate: ______________________

Observer: MAr Wind Spd.: ____ Wind Dir.: S Sky: 30 Temp: 65

Dominant (>50%) AES Habitat Type: ______________________

Other Habitats: ______________________

N

W E

S

Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
RWBL						23					
AMRO						4					
HOWR						/					
CHSP						/					
CSWA						/					
CEDW						////					
NRWS						~~////~~ /					
TRES						~~////~~ ~~////~~ //					
EUST							20				
AMGO							////				
GRCA							/				
YWAR							/				

PASSERINE - Bird Point Count Data Sheet

BUFRIV 11-0543
Project Name

[illegible]
Sample Point ID # & Name

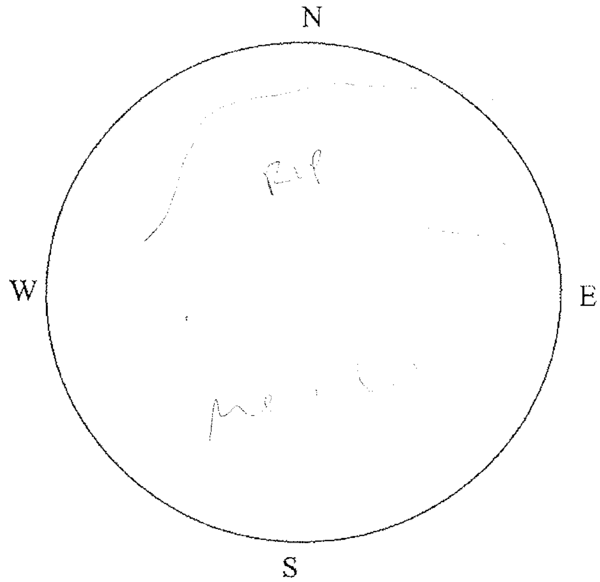
11/22/11 — Date
1157 — Start Time
[illegible] — Stop Time

78.819450 , 42.865592
X coordinate, Y coordinate

mjm — Observer
0-5 — Wind Spd.
[illegible] — Wind Dir.
overcast — Sky
34° — Temp

[illegible]
Dominant (>50%) AES Habitat Type

Other Habitats Riparian Forest / Up. Bdlf For.



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
DOWO	[illegible]										
[illegible]	[illegible]										
[illegible]											
	[illegible]	[illegible]	[illegible]								
				[illegible]							

PASSERINE - Bird Point Count Data Sheet

Mes

BNR [illegible]
Project Name

BNF 116 Seneca Bluffs
Sample Point ID # & Name

1/22/12
Date

1255
Start Time

1305
Stop Time

X coordinate, Y coordinate

mjm
Observer

1
Wind Spd.

SSE
Wind Dir.

3
Sky

35
Temp

Meadow / Fldpn Forest
Dominant (>50%) AES Habitat Type

Other Habitats Open Water / Residential

N

W

E

S

Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
EUST	P	NW	200			55+					Same as #15
AMCR	C/F	SE	150	N	50	|||				
ATSP	C/Fo	SW	50				||				

PASSERINE - Bird Point Count Data Sheet

BUF RIV 11-0543
Project Name

BUF 116 - Seneca Bluffs North
Sample Point ID # & Name

4/20/12
Date

6:53 am
Start Time

7:23 am
Stop Time

78.819450, 42.865542
X coordinate, Y coordinate

[illegible]
Observer

2.5 mph
Wind Spd.

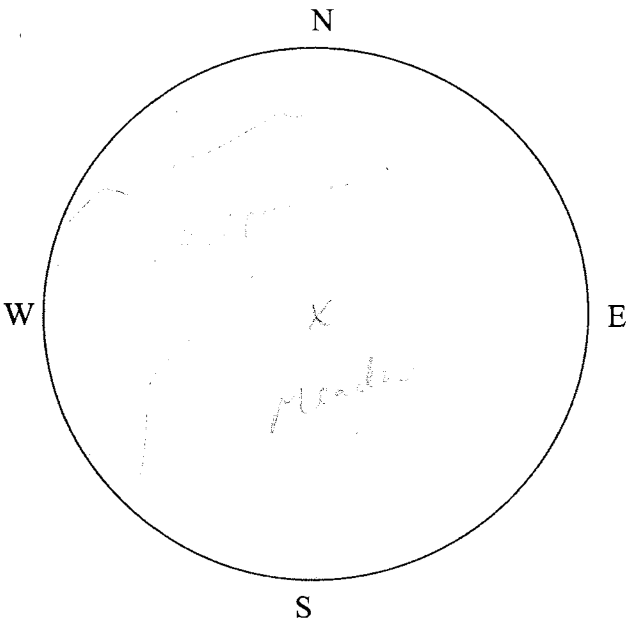
Wind Dir.

0
Sky

37.6 °F
Temp

Meadow / Grassland
Dominant (>50%) AES Habitat Type

Other Habitats Riparian Forest / Upland Forest



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

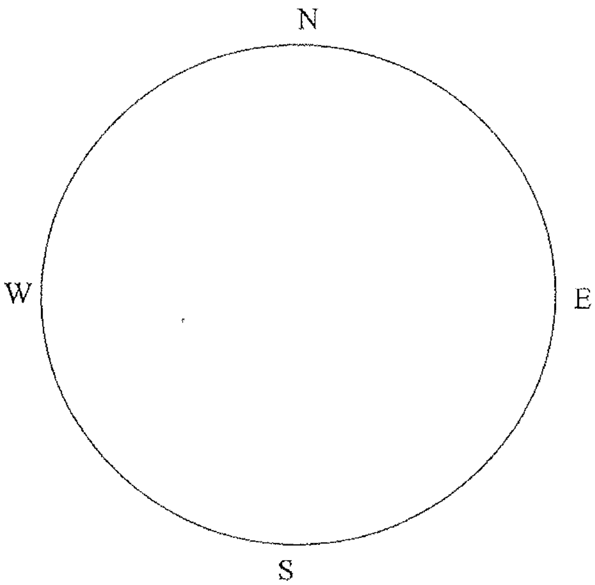
Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
[illegible]	P		var		var	I					
[illegible]	P/F		var		var						
EUST	P		35 m		var		III				
AMGO	F		var		var		I	I			
[illegible]	[illegible]/Fo		20 m		0 m		I				
[illegible]	F		var		var			III			
AMCR	F		var		var			I			
NOCA	P		15 m		2 m			I			

PASSERINE - Bird Point Count Data Sheet

Project Name:	Sample Point ID # & Name: BUFF 116
Date: 3/10/12	Start Time: 6:03 AM
Stop Time: 6:13 am	X coordinate, Y coordinate:
Observer: NG	Wind Spd.: 1-2
Wind Dir: N/NW	Sky: 3
Temp: [illegible]	Dominant (>50%) AES Habitat Type:

Other Habitats



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
NEWA	P/C		25m			II					
AMGO	F		30m		var	III		I			
BAOR	P/C					I					
NRWS	Fo	var	var		var	I					
UNGU	F		var		var	I	III				Unknown Gull
WAVI	P/C		25m		5m	I					
EUST	F/P		var		var	II					
GBHE	F/P		60m		5m		II				
RWBL	F/P		var		var		I	I			
SOSP	P/C		20-30m		var			III			
COGR	F		var		var			I			
RODO	F			E				12			
BHCO	F/P		25m		—			I			
											Flock of unknown gulls
											~100 RBGU

PASSERINE - Bird Point Count Data Sheet

BNR ADC WS
Project Name

BUF 11B SB NE
Sample Point ID # & Name

5/11/12
Date

1115
Start Time

1125
Stop Time

X coordinate, Y coordinate

mym
Observer

1
Wind Spd.

W
Wind Dir.

0
Sky

66
Temp

Dominant (>50%) AES Habitat Type

Other Habitats

N

W

E

S

Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes: H. versicolor calling

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
AMGO	C	SW	20			1					
YWAR	C	SE	20			1					
MALL	F	N	100	E	5	1					
[illegible]SR	C	S	5			1					
CAGO	F	NW	75			||||| ||||					[illegible] (?)
BAOR	C	E	25			1					
SOSP	C	W	150			1					[illegible]
SOSP	C	SW	75				1				
[illegible]	C	S	50				1				
[illegible]	SSE	C	50				1				
NOCA	C	SE	10				1				
[illegible]	F	SW	50	S	25		[illegible]				
[illegible]	C	W	100					1			
WAVI	C	SE	50					1			
[illegible]	C	SW	150					1			
YWAR	C	W	30					1			
[illegible]	C	W	75					1			
MODO	F	W	100	E	10			||||			

PASSERINE - Bird Point Count Data Sheet

BUFF RIV
Project Name

BUF 116
Sample Point ID # & Name

6/5/12
Date

5:41 am
Start Time

5:46 am
Stop Time

X coordinate, Y coordinate

NG
Observer

1
Wind Spd.

Wind Dir.

2
Sky

52.1°F
Temp

Dominant (>50%) AES Habitat Type

Other Habitats

N

W

E

S

Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
SOSP	P	E/SE	20/var	—	2m	1	1				
YWAR	-	NE	30	—	2m	1	1				
WIFL	P	SE	35m	—	1m	1					
WAVI	P	N/NE	10m	—	4m	1					
COGR	F	E>W	2m	W	4m	1	1				
RWBL	P	E	50m	—	var	1	IIII				
RBGU	F	var	var	var	20m		II				
BLJA	P	NW	10m	—	2m		1				
COYE	P	E	30m	—	—		1				

PASSERINE - Bird Point Count Data Sheet

BUFF RIV
Project Name

BUFF 116 - Seneca Bluffs
Sample Point ID # & Name

6/15/12
Date

5:35am
Start Time

5:40am
Stop Time

X coordinate, Y coordinate

NG
Observer

–
Wind Spd.

–
Wind Dir.

Clear-0
Sky

57.1°F
Temp

Dominant (>50%) AES Habitat Type

Other Habitats

N

W

E

S

Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
SOSP	P	E+W	5m-20m	–	2m	III					
BWAC	P	E	30m	–	?m	III					
WAVI	P	E/NE	50m	–	5m	I					
RBGU	F	E	100m	S	~100m	II	I				
YWAR	P	SE	20m	–	1m	I	II				
WIFL	P	SE	10m	–	3m		I				
AMCR	F	W	75m	–	10m		I				
AMRO	P	NE	40m	–	5m		I				
NOCA	P	E/SE	50m	–	–		I				
											~75 RBGU flew over
											from NE -> S after
											[illegible]
											* Saw large ♀ [illegible]
											on gray [illegible]

PASSERINE - Bird Point Count Data Sheet

BUFF 2?(
Project Name

BVFF 116 - Sum Bluffs
Sample Point ID # & Name

6/27/12
Date

5:56 am
Start Time

6:01 am
Stop Time

X coordinate, Y coordinate

NA
Observer

1
Wind Spd.

W/NW
Wind Dir.

0
Sky

59.3°F
Temp

Dominant (>50%) AES Habitat Type

Other Habitats

N

W E

S

Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
RWBL	P	SE	30m	—	1m	II					
WAVI	P	E/SE	45m	—	3m	I					
AMGO	F	E	10m	N	5m	I	I				
RBGM	F	S	70m	W/NW	20m	IIII	II				
CEDW	P/F	E	25m	E	5m	I					
BEKI	F	S	5m	W	3m	I					
SOSP	P	S/SW	10m	—	2m	I					
YWAR	P	E	15m	—	1m	I					
AMCR	P	N	10m	—	5m		II				
LEFL	P	SE	15m	—	2m		I				* Maybe WIFL 3:50 - LEFL

Chebik...

PASSERINE - Bird Point Count Data Sheet

Project Name: BWF

Sample Point ID # & Name: 116

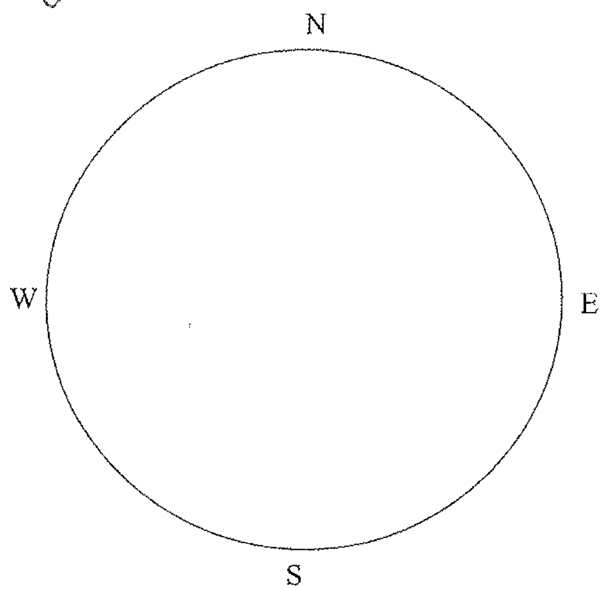
Date: 8/24/12 Start Time: 0656 Stop Time: 0701

X coordinate, Y coordinate:

Observer: MJ Wind Spd.: Wind Dir: S Sky: 30 Temp: 65

Dominant (>50%) AES Habitat Type:

Other Habitats:



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
WAVI						/					
BAOR						/					
SOSP						//					
AMGO						///					
MODO						//					
YWAR						/					
NOCA						//					
TUTI						///					
BCCH							//				
BLJA							/				
COYE	CF						/				
CEFL							/				
BEKI							/				

PASSERINE - Bird Point Count Data Sheet

Project Name: [illegible]

Sample Point ID # & Name: BMP 117 - [illegible] South [illegible]

Date: [illegible]

Start Time: [illegible]

Stop Time: [illegible]

X coordinate, Y coordinate: 78.817062 , 42.865482

Observer: [illegible]

Wind Spd.: 0-15

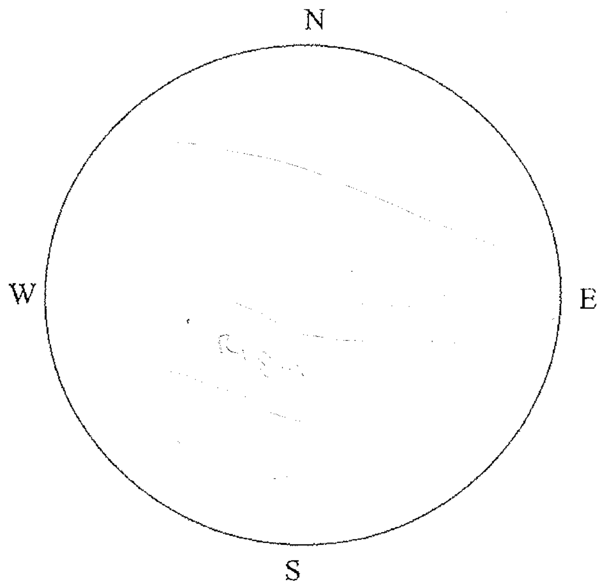
Wind Dir.: [illegible]

Sky: [illegible]

Temp: [illegible]

Dominant (>50%) AES Habitat Type: [illegible] Forest

Other Habitats: [illegible]



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes

PASSERINE - Bird Point Count Data Sheet

Project Name: BNR LBR AR

Sample Point ID # & Name: Buf 117 Fldpln East

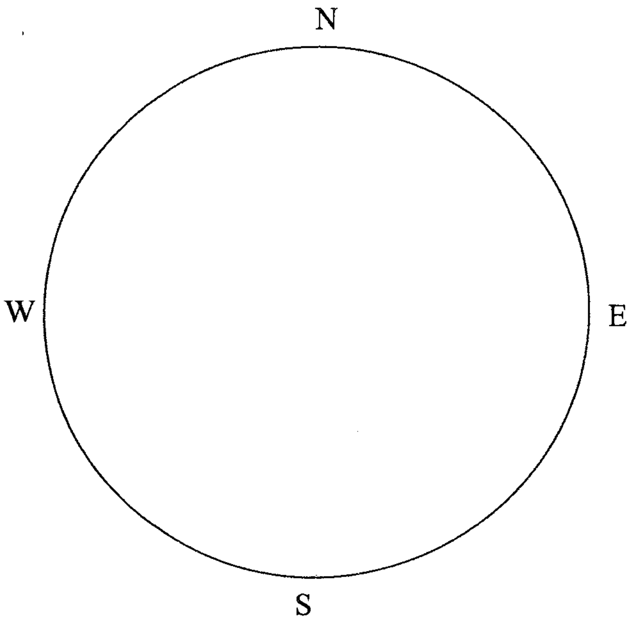
Date: 1/22/12 Start Time: 1307 Stop Time: 1317

X coordinate, Y coordinate:

Observer: mpm Wind Spd.: 1 Wind Dir.: SSE Sky: 3 Temp: 35

Dominant (>50%) AES Habitat Type:

Other Habitats:



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other /C = call		

Notes: Fox fox

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
BCCH	C	N	250				I				
AMGO	C	SE	100				I				
AMCR	F	N	750	NNW	50		I				
"	C	SE	700+					~" (~2)			
POPI	F	E	700+	var	30				~~IIII~~ III		
WPA	F	E	700+	S	30				~~IIII~~ ~~IIII~~ II		
AMCR	C/P/F	E	100	W	25				I		

PASSERINE - Bird Point Count Data Sheet

BUF RIV 11-0543
Project Name

BUF 117 - Seneca Bluffs S.E.
Sample Point ID # & Name

4/27/12
Date

6:39 am
Start Time

[illegible]
Stop Time

78.817062, 42.865422
X coordinate, Y coordinate

NG
Observer

2.6 mph
Wind Spd.

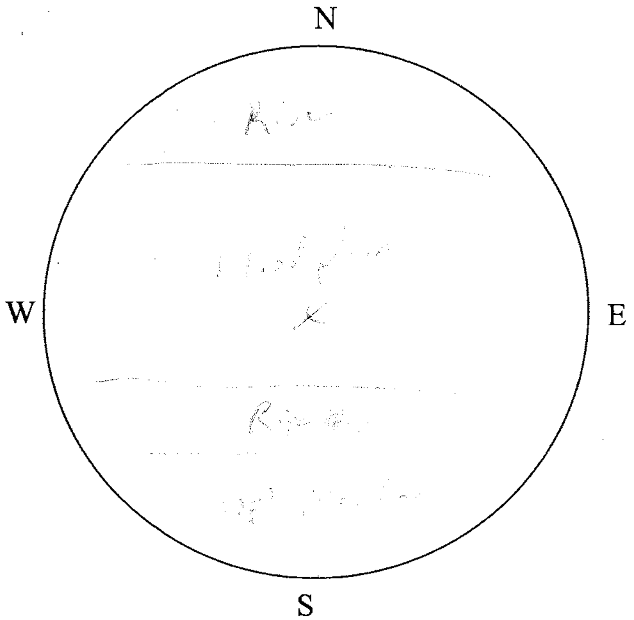
Wind Dir.

0
Sky

37.5°F
Temp

Riparian Forest
Dominant (>50%) AES Habitat Type

Other Habitats Floodplain Wetland / Up Meadow



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
EUST	P/F		[illegible]		var	11					
RWBL	P		25 m		var	1111					
MALL	P		75m		0 m	1					
CAGO	P		[illegible]		0 m	1					
RBWO	P		var		0 m		11				
NOCA	P		20 m		3 m		1				
AMGO	F		var		var			1			

PASSERINE - Bird Point Count Data Sheet

Project Name:

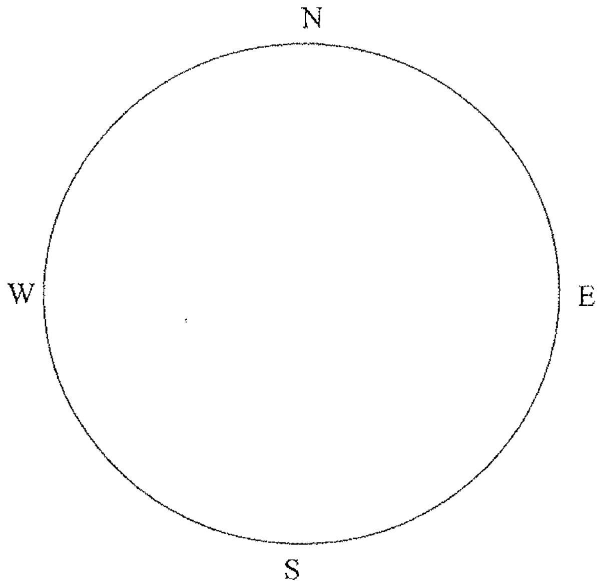
Sample Point ID # & Name: BUFF 117

Date: 5/10/12 | Start Time: 0623 | Stop Time: 0633 | X coordinate, Y coordinate:

Observer: [illegible] | Wind Spd.: 1-2 | Wind Dir.: N/NW | Sky: 3 | Temp: 47°F

Dominant (>50%) AES Habitat Type:

Other Habitats:



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

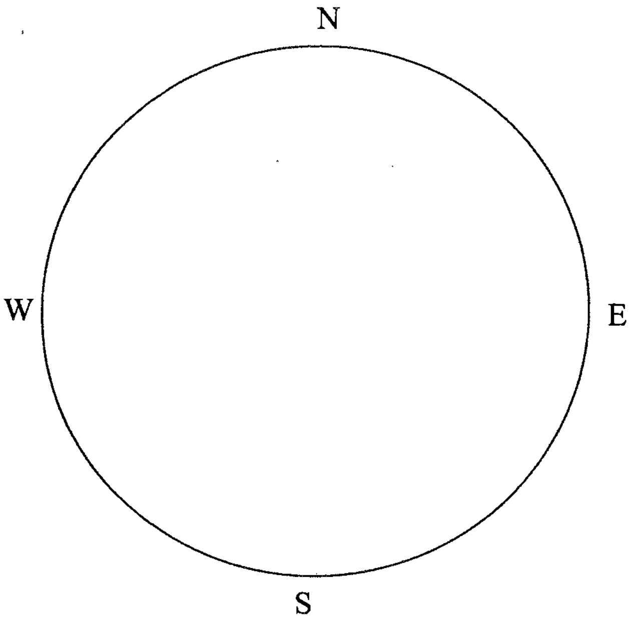
Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
[illegible]	[illegible]	[illegible]				////					
[illegible]	[illegible]	N	[illegible]			/					
[illegible]	[illegible]					/					
YWAR	C/T	WNW	25			/					
YWAR	C/T	SW	30			//					
[illegible]	C/T		25			/					
COYE	C/T	NW	150			/					
[illegible]	C/T	[illegible]	[illegible]			/	////				Chasing
[illegible]	[illegible]	[illegible]	[illegible]			[illegible]					
[illegible]	P	E	175			/					
[illegible]	[illegible]	E	200				[illegible]				[illegible]
[illegible]	[illegible]	E	150								
[illegible]	[illegible]	N	[illegible]				//				Pair [illegible]
[illegible]	C	S	[illegible]					/			
[illegible]	[illegible]	[illegible]	[illegible]					/			
AMKE	Fo/A[illegible]	E	100	var	50			/			
											COYE

PASSERINE - Bird Point Count Data Sheet

Project Name: BNR AOC WS	Sample Point ID # & Name: BUF 117 SB SE
Date: 5/11/12	Start Time: 1100
Stop Time: 1110	X coordinate, Y coordinate:
Observer: [illegible]	Wind Spd.: 1
Wind Dir.: W	Sky: 0
Temp: 66	Dominant (>50%) AES Habitat Type:

Other Habitats



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes: H. versicolor calling

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
AMCR	C	N	150				I				
CSWA	C/F	WNW	25				I				
YWAR	C	WNW	50				I				
GRCA	C	SW	25				I				
COGR	C	S	20				I				
NOFL	C	S	20				I				
MAWA	Fo	WNW	10				I				
BLJA	C	NNE	50					I			
YWAR	C	E	25					I			
RWBL	C	E	20					I			
RWBL	C	E	50					I			
RWBL	C	SE	50					I			
BARS	Fo	E	75	var	5				IIII		
BHVI	C	N	5						I		
RBGU	F	NE	150	S	25				IIIII I		
BARO	C	N	75						I		
AMGO	C	N	20						II		
RTHA	C/P/F	E	150	var	var				I		
WAVI	C	N	20						I		
MALL	F	NE	40	S	5				II		pair
SPSA	Fo	E	40						I		
SOSA	Fo	ENE	75						I		
BEKI	F/C	SE	75	N	3				I		

PASSERINE - Bird Point Count Data Sheet

BUF RIV
Project Name

BUFF 117
Sample Point ID # & Name

6/5/12
Date

551 am
Start Time

5:56 am
Stop Time

X coordinate, Y coordinate

NG
Observer

2
Wind Spd.

NE
Wind Dir.

2
Sky

52.2F
Temp

Dominant (>50%) AES Habitat Type

Other Habitats

N

W E

S

Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
BRTH	P	E	10m	—	3m	1					
YWAR	P	E	5m	—	2m	11	1				
CEDW	F	N	[illegible]	S	10m	1					
RWBL	P	W	20m	—	1m	1111					
RBGU	F	[illegible]	[illegible]	[illegible]	[illegible]		1				
AMGO	F	E	[illegible]	W	5m		11				
BADR	P	[illegible]	40m	—	10m		1				

PASSERINE - Bird Point Count Data Sheet

Project Name: BUFF T2W

Sample Point ID # & Name: BUFF 117 - Beaver [illegible]

Date: 6/15/12

Start Time: 5:47am

Stop Time: 5:52 am

X coordinate, Y coordinate:

Observer: NG

Wind Spd.: 0

Wind Dir.: —

Sky: 0

Temp: 57.1°F

Dominant (>50%) AES Habitat Type:

Other Habitats:

Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
YWAR	P	E	15m	—	[illegible]	I	I				
RWBL	P	var	var	—	2m	IIII	I				
WAVI	P	S	15m	—	[illegible]	I					
MALL	P	N	30m	—	[illegible]	I					
SOSP	P	W	5m	—	2m	I	I				
BAOR	P	S	25m	—	5m		I				
AMGO	F	N	10m	W	10m		II				
NOCA	P	W	5m	2m			I				

* Recent Beaver activity.

PASSERINE - Bird Point Count Data Sheet

Project Name: BUFF RIV

Sample Point ID # & Name: BUFF 117 - [illegible]

Date: 6/27/12

Start Time: 6:04am

Stop Time: 6:29am

X coordinate, Y coordinate:

Observer: NA

Wind Spd.: 1

Wind Dir.: W/NW

Sky: 0

Temp: 54.4°F

Dominant (>50%) AES Habitat Type:

Other Habitats:

N

W

E

S

Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
[illegible]LA	P	E/SE	5m	—	3m	I					
RWBL	P	NE	15m	—	2m	II	III				
RBGU	F	E	Var	S	50m	II					
SOSA	F	W/NW	50m	NE	10m	II					
BAOR	P	W	20m	—	4m		I				
HOWR	P	NNE	45m	—	1m		I				
BARS	Fo	E/NE	Var	Var	2-5m		III				

PASSERINE - Bird Point Count Data Sheet

Project Name ______ Sample Point ID # & Name BLJ 117

Date 8/24 Start Time 0649 ~~0650~~ Stop Time 0654 X coordinate, Y coordinate ______

Observer [illegible] Wind Spd. 1 Wind Dir 6 Sky 50 Temp 63

Dominant (>50%) AES Habitat Type ______

Other Habitats ______

N

W E

S

Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
BDOR						/					
BCJA						// +					
WOLI						//					
AMCR						///	//				
MOLL						//					
NRWS						~~////~~ ~~////~~					
SSHA						/					
ROPI							////				
NOPA							/				
CEDW							~~////~~ ///				
BARS							////				
GRCA							//				

PASSERINE - Bird Point Count Data Sheet

[illegible]
Project Name

Bat 115 - [illegible]
Sample Point ID # & Name

11/[illegible]
Date

1223
Start Time

[illegible]
Stop Time

78.817062 , 42.865482
X coordinate, Y coordinate

[illegible]
Observer

10 [illegible]
Wind Spd.

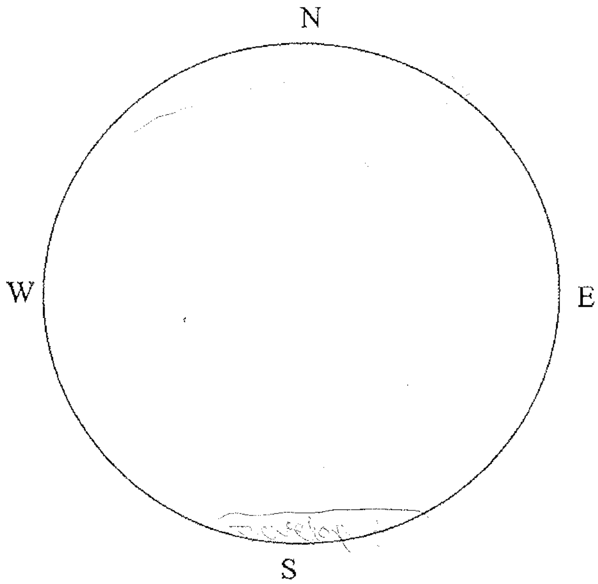
[illegible]
Wind Dir.

[illegible]
Sky

[illegible]
Temp

[illegible] ([illegible])
Dominant (>50%) AES Habitat Type

Other Habitats [illegible]



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
[illegible]	F	[illegible]	[illegible]	[illegible]	[illegible]						
	F/S	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]					
	F	[illegible]	[illegible]	[illegible]	[illegible]						
[illegible]	F	W	[illegible]	E	[illegible]			[illegible]			

PASSERINE - Bird Point Count Data Sheet

Project Name: BHR [illegible] AOC 11-0543

Sample Point ID # & Name: Buf 118

Date: 1/22/12

Start Time: 1320

Stop Time: 1330

X coordinate, Y coordinate:

Observer: [illegible]

Wind Spd.: 1

Wind Dir.: E

Sky: 3

Temp: 35

Dominant (>50%) AES Habitat Type: Upland Meadow

Other Habitats: Successional Forest / Developed

N

W

E

S

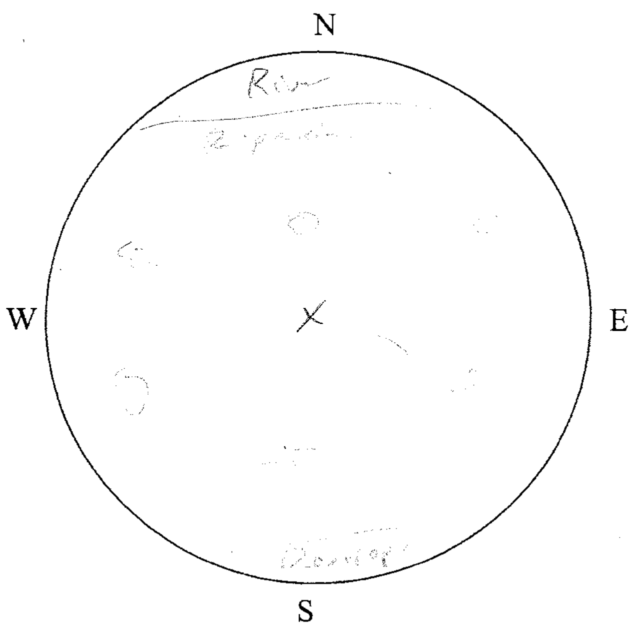
Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
ROPI	F	N	15	SE	15	IIII III					
AMCR	F	N	250	W	30	II					
EUST	F	NW	25	E	15		I				
RBGU	F	W	400	S	35		I				following River
RPHO	C	NNW	400	/	/			I			
ROPI	F	SW	500	VAR	75			20			'Balling' - [illegible]
SSHA	F	SW	540	VAR	90			I			circling, then going [illegible] drifting SW
BCCH	Fo/C	S	50		/			I			
TUTI	Fo/C	S	50	/				II			

PASSERINE - Bird Point Count Data Sheet

Project Name: BUF RIV 11-0543
Sample Point ID # & Name: BUF 118 - Seneca Bluffs
Date: 4/27/12
Start Time: 7:05 am
Stop Time: 7:15 am
X coordinate, Y coordinate: 78.817062, 42.865482
Observer: NG
Wind Spd.: 4.7 mph
Wind Dir.:
Sky: 1
Temp: 56.9°F
Dominant (>50%) AES Habitat Type: Grassland (Meadow)
Other Habitats: Successional Forest / Developed



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

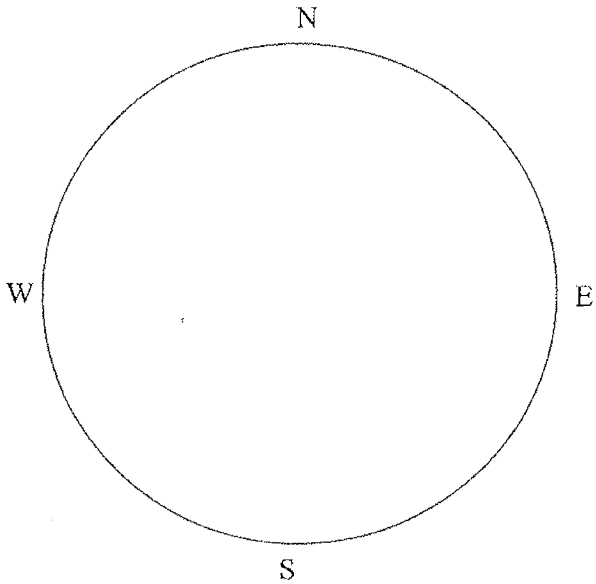
Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
RWBL	P		5m - 50m		2m - 10m	||||		||			
RBGU	F		—			~~||||~~ |					
SOSP	P		2m - 25m		1m - 3m			||			
COGR	F		—					|			

PASSERINE - Bird Point Count Data Sheet

Project Name:	Sample Point ID # & Name: BUFF 118
Date: 5/10/12	Start Time: 6:36 am
Stop Time: 6:46 am	X coordinate, Y coordinate:
Observer: NG	Wind Spd.: 1-2
Wind Dir.: N/NW	Sky:
Temp: 47°F	Dominant (>50%) AES Habitat Type:

Other Habitats



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
RODO	F		Vm		Vm	11					
RBGU	F		Vm		Vm	111					
AMCR	F					1					
COYE	P/C		35 m		2 m	1					
WTSP	P/C		[illegible]		[illegible]	1					
[illegible]	[illegible]		[illegible]			1					
[illegible]	[illegible]				[illegible]			11			
[illegible]	F/C						1				
AMGO	F		Vm		Vm	11					
–	F		Vm		Vm		111				Unknown Passerine
EUST	F/P		Vm		Vm		1				
NOCA	P		20 m		–		1				
YEWA	P		[illegible]		–			1			
SOSP	[illegible]		15 m					1			
MODO	P		15 m	N	2 m			1			
RWBL	F/P		15 m		2 m			11			
											–Stick nest in willow
											near river
											–whitetail deer track

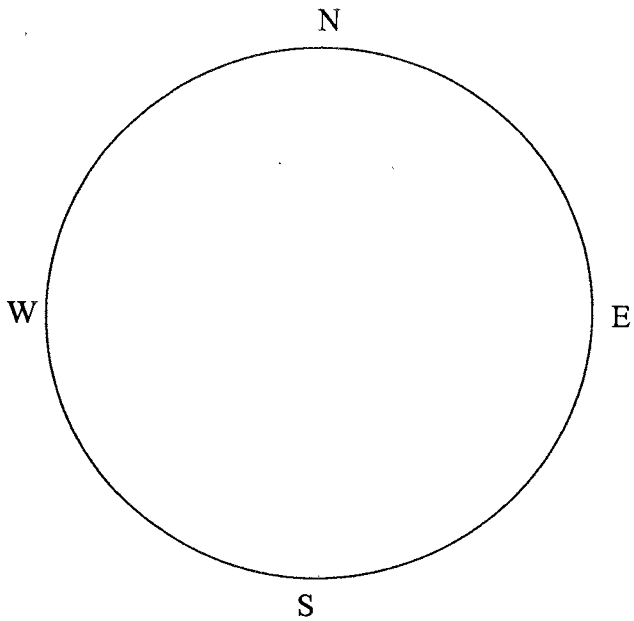
PASSERINE - Bird Point Count Data Sheet

BNR WS	Buf 118 SB SW
Project Name	Sample Point ID # & Name

5/11/12	1044	1054	
Date	Start Time	Stop Time	X coordinate, Y coordinate

MJM	1	W	0	66°	
Observer	Wind Spd.	Wind Dir.	Sky	Temp	Dominant (>50%) AES Habitat Type

Other Habitats



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
SOSP	C	N	150			1					
AMGO	C/F	NW	15			1					
YWAR	C	N	20			1					
WOVI	C	S	10			1					
RWBL	C	NE	25			1					
YWAR	C	W	30			1					
BCCH	C	W	20			1					
NAWA	C/P	SE	10			1					
REVI	C	NW	70			1					
COGR	C	NE	100				1				
MODO	F	N	75	S	20		IIII				
WBNU	C	S	20				1				
BAOR	C	ESE	40				1				
GRCA	C	SW	20				1				
SOSP	C	S	20					1			
NABL	C	N	100					1			
WAVI	C	NW	50					1			
TUTI	C	NW	50					1			
CHSP	C	NW	100					1			
AMCR	C	SSE	150					1			
HOWR	C	S	20					1			
AMRO	C	SE	10					1			
RWBL	C	E	75					1			
RWBL	F	N	50	SW	10			III			
RBGU	F	NW	60	E	25			II			
AMKE	F/F	NNE	175	VOR	40			1			hovering [illegible]

PASSERINE - Bird Point Count Data Sheet

BUF RIV
Project Name

BUFF 115
Sample Point ID # & Name

6/5/02
Date

6:01 am
Start Time

6:06 am
Stop Time

X coordinate, Y coordinate

NM
Observer

2
Wind Spd.

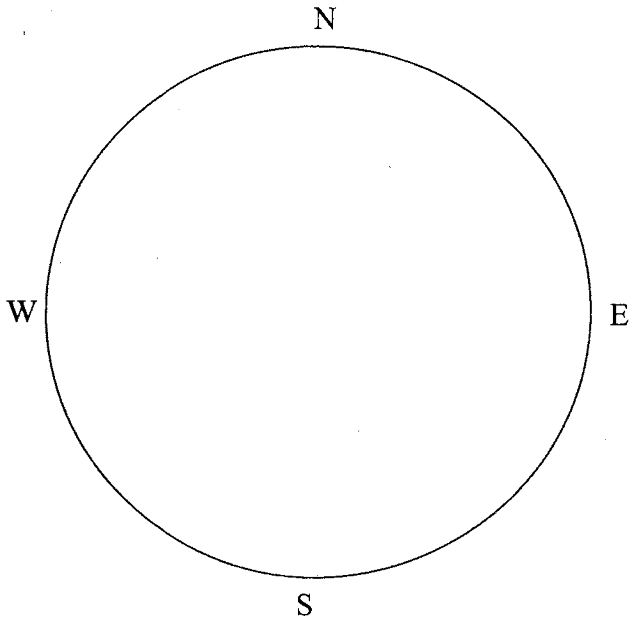
NE
Wind Dir.

2
Sky

<2.1°
Temp

Dominant (>50%) AES Habitat Type

Other Habitats



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
NOCA	P	SE	30m	–	5m	1					
EUBL	P	var	var	–	1m	III	I				
BAOR	P	NNE	70m	–	—	I					
CEDW	F	NE	45m	E	10m	II					
WIFL	P	W	35m	–	3m	I					
RBGU	F	var	var	var	50m	III	II				
COGR	F	N	15m	SE	4m		II				
AMRO	P	NE	50m	–	—		I				
SOSP	P	E	30m	–	2m		I				

PASSERINE - Bird Point Count Data Sheet

BUFF 21V
Project Name

BUFF 11B - [illegible]
Sample Point ID # & Name

6/15/12
Date

5:58 am
Start Time

6:03 am
Stop Time

X coordinate, Y coordinate

NG
Observer

0
Wind Spd.

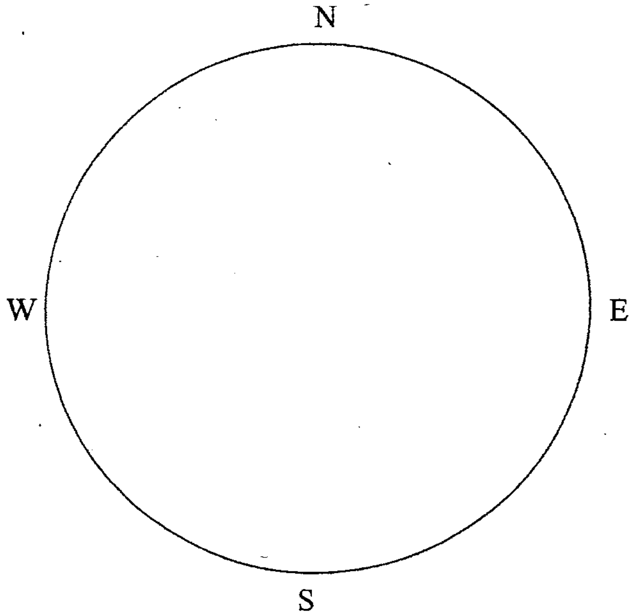
–
Wind Dir.

0
Sky

56.5°F
Temp

Dominant (>50%) AES Habitat Type

Other Habitats



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
YWAR	P	SW	15m	–	5m	|	|				
GRCA	P	E	25m	–	3m	|					
WIFL	P	W	15m	–	1m	|					
AMRO	F	W	15m	S	5m	|					
NOCA	P	E	60m	–	5m	|					
RWBL	P	Var	[illegible]	–	2m	|||					
[illegible]	P	E	75m	–	–	|					
SOSP	P	W	40m	–	1m	|	|				
RBGU	F	Var	[illegible]	[illegible]	[illegible]	||||					
[illegible]	P/F	NE	35m	W	2m		||				
AMRO	P/Fo	E	15m	–	0m-2m		|				
BAOR	P	SE	20m	–	5m		|				
CEDW	P	E/SE	5m	–	4m		|||				

PASSERINE - Bird Point Count Data Sheet

BUFF RIV
Project Name

BUFF 118 - [illegible]
Sample Point ID # & Name

6/27/12
Date

6:13 am
Start Time

6:18 am
Stop Time

X coordinate, Y coordinate

NA
Observer

1
Wind Spd.

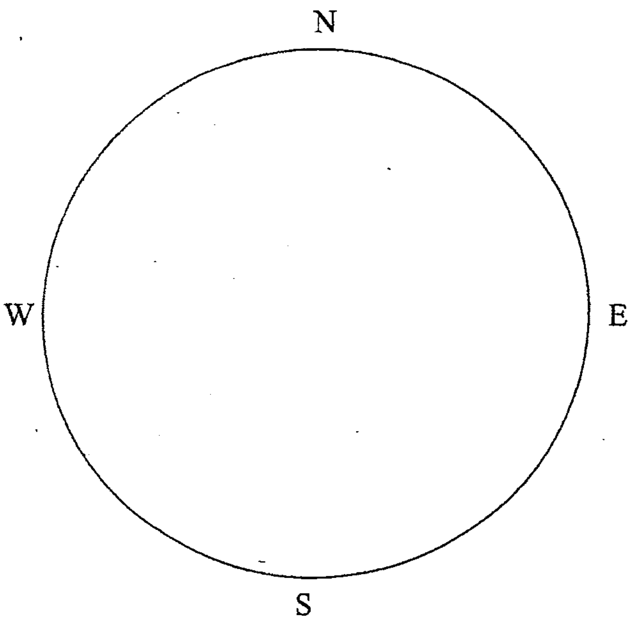
W/NW
Wind Dir.

0
Sky

59.2°F
Temp

Dominant (>50%) AES Habitat Type

Other Habitats



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
RWBL	P	W	15m	–	1m	II					
SOSP	P	NW	25m	–	1m	I					
YWAR	P	W	10m	–	3m	I					
WAVI	P	W	35m	–	4m	I					
EUST	F	W	30m	E	10m	I					
BAOR	P	SE	20m	–	5m	I					
WIFL	P	S	15m	–	1m	I					
YRWA	P	SW	10m	–	2m		I				
RBGU	F	W,N	Var	W,N	Var	II	III				
AMRO	F	NE	35m	E	2m		I				
AMGO	F	NE	20m	SE	3m		II				

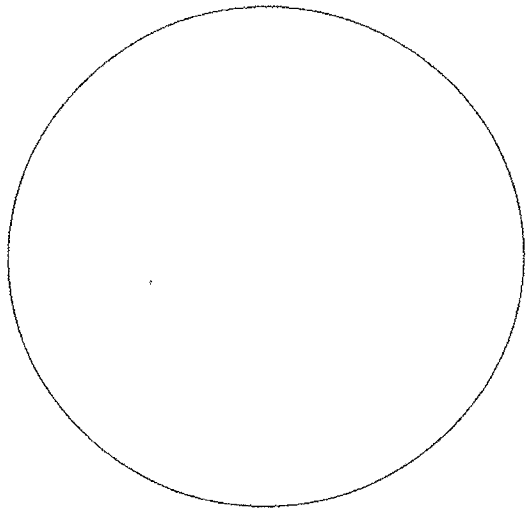
PASSERINE - Bird Point Count Data Sheet

Project Name: ________ | Sample Point ID # & Name: BUF 108

Date: 8/24 | Start Time: 0643 | Stop Time: 0647 | X coordinate, Y coordinate: ________

Observer: mpn | Wind Spd.: 1 | Wind Dir.: S | Sky: 50% | Temp: 62 | Dominant (>50%) AES Habitat Type: ________

Other Habitats: ________



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
AMCR						//					
AMGO						卌/					
AMRO						///					
MODO						//					
SOSP						/					
CHSP						/					
RWBL						///					
WIFL						/					
CEDW							卌/				
WAVI							//				
RBGU							35				
EUST							6				
ROPI							4				

PASSERINE - Bird Point Count Data Sheet

BUF RIV 11-0543
Project Name

Buff 119 - Pork Pie
Sample Point ID # & Name

4/27/12
Date

9:34 am
Start Time

9:44 am
Stop Time

X coordinate, Y coordinate

NG
Observer

2.1mph
Wind Spd.

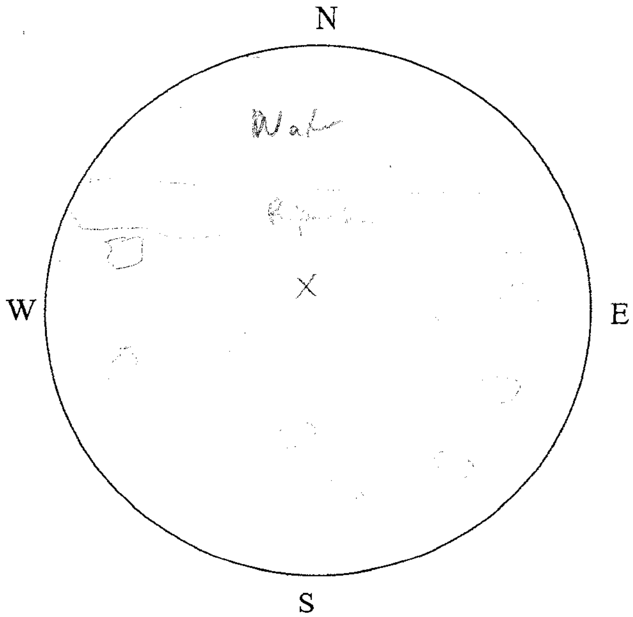
Wind Dir.

3
Sky

36.8°F
Temp

Upland Scrub/Shrub
Dominant (>50%) AES Habitat Type

Other Habitats Open Water / Developed



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
CAGO	Fo/F		10 m from		var	||	||				
AMRO	P		var		3m	||					
RWBL	P/F		var		var	|||					
RBGU	F		var		var	|		||			
NOFL	F		var		var	1					
AMCR	F		var		var		||				
TRSW	F/Fo		var		3m		||				
EUST	F/Fo		var		var			30+			
											Raccoon Skeleton
											Deer + Fox scat

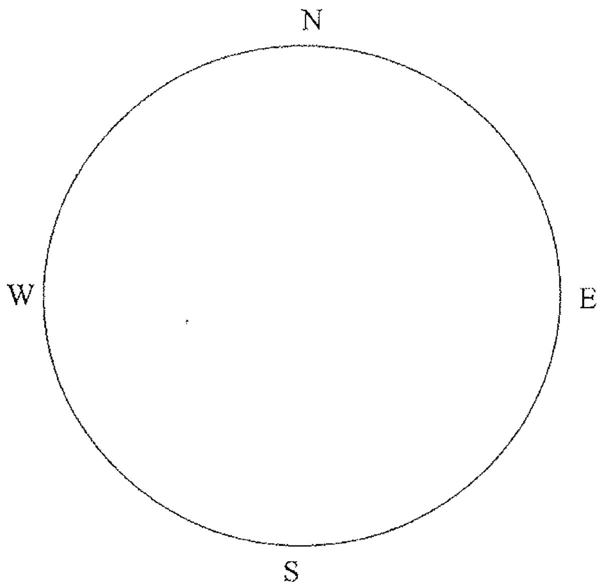
PASSERINE - Bird Point Count Data Sheet

Project Name: ____________________ Sample Point ID # & Name: BUFF 119

Date: 5/10/12 Start Time: 9:00 am Stop Time: 9:10 a X coordinate, Y coordinate: ____________________

Observer: NG Wind Spd.: 1 Wind Dir: NW Sky: 1 Temp: 57°F Dominant (>50%) AES Habitat Type: ____________________

Other Habitats____________________



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
SOSP	P/C	W	5m	—	1m	I	I				
AMRO	P/C		15m			I	I				
YWAR	P/C	NE	10m	–	1m	II		I			
NRWS	F/Fo	W	[illegible]	–	2m	I	I				
CAGO	F/C	W	—	E	–	II		~~IIII~~			
RBGU	F	–	–	–	.	II	I	III			
KWBL	P/C	NE	15m	–	2m		III	I			
AMGO	F	N	10m	E	3m		II				
GRCA	P	NE	15m	–	2m			I			
											COYE

PASSERINE - Bird Point Count Data Sheet

Project Name: [illegible]

Sample Point ID # & Name: Bup 19 [illegible]

Date: [illegible]

Start Time: 0721

Stop Time: 0731

X coordinate, Y coordinate:

Observer: [illegible]

Wind Spd.: 1

Wind Dir.: [illegible]

Sky: [illegible]

Temp: [illegible]

Dominant (>50%) AES Habitat Type:

Other Habitats:

N

W

E

S

Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes: striped skunk!

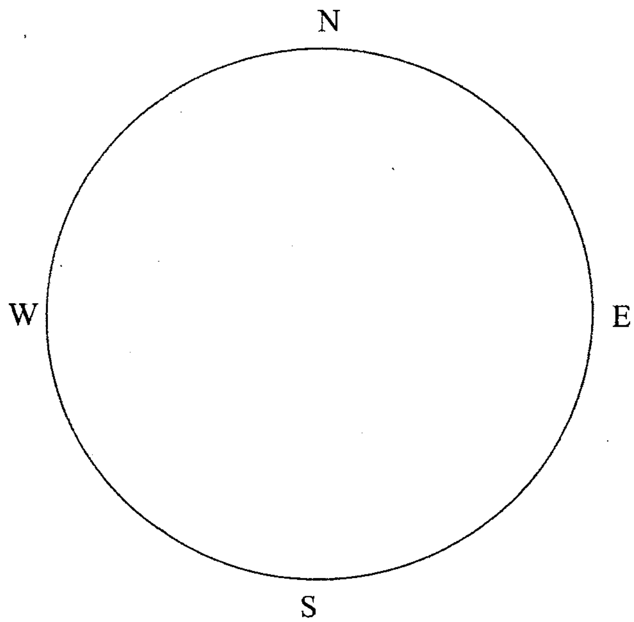
Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
[illegible]	[illegible]	NE	40			[illegible]					
[illegible]		N	10			1					
[illegible]	[illegible]	[illegible]	[illegible]			1					
[illegible]						1					
[illegible]	[illegible]	[illegible]	[illegible]			11					PAIR
[illegible]	F	S	[illegible]	W	50	1					[illegible]
						28					
[illegible]	F	NE	300			13					
[illegible]	F	S	200	S	[illegible]		1				
[illegible]	C	S	30				1				
[illegible]	[illegible]	S	5				1				
[illegible]	[illegible]		40		[illegible]		1				called + flying [illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]			
AMRE		S	5	W	5			[illegible]			
[illegible]	C	S	10	[illegible]	3			[illegible]			
[illegible]	C	S	[illegible]	[illegible]	3			[illegible]			

PASSERINE - Bird Point Count Data Sheet

BUF RIV		BVFF 119 - Pork Pie	
Project Name		Sample Point ID # & Name	

6/5/12	7:48	7:53	
Date	Start Time	Stop Time	X coordinate, Y coordinate

NG	2	NE	1	55.3°F	
Observer	Wind Spd.	Wind Dir.	Sky	Temp	Dominant (>50%) AES Habitat Type



Other Habitats

Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
EUST	F/P	W/SW	10 m	var	1 m	~~||||~~ ||					
SOSP	P	NE	3 m	—	2 m	||					
AMRO	F	SW	5 m	W	2 m	|					
GRCA	P	E	5 m	—	3 m	|					
AMGO	F	W	15 m	N	4 m	||					
NRSW	Fo	NE	var	var	2 m	||	|||				
AMCR	F	N	50 m	E	var	|	|				
RBGU	F	NW	var	var	var	||	||||				

PASSERINE - Bird Point Count Data Sheet

BUFF RIV
Project Name

BUFF 119 - Pork Tie
Sample Point ID # & Name

6/15/12
Date

8:02 am
Start Time

8:07 am
Stop Time

X coordinate, Y coordinate

NG
Observer

1-2mph
Wind Spd.

—
Wind Dir.

0
Sky

69.5°F
Temp

Dominant (>50%) AES Habitat Type

Other Habitats

N

W E

S

Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
FISP	P	SW	30m	—	1m	1					
SOSP	P	N	5m	—	3m	1					
YWAR	P	E/NE	15m	—	2m	1	1				
AMRO	P	S	20m	—	2m	11					
WIFL	P	E	30m	—	1m	1					
BARS	Fo	W	30m	N	5-10m	1	11				
NRWS	Fo	var	var	N	10m	11	1				
RBGU	F	W/E	var	N/S	var		111				

PASSERINE - Bird Point Count Data Sheet

Project Name: BUFF RIV

Sample Point ID # & Name: BUFF HQ - Park Pic

Date: 6/27/12 | Start Time: 7:59 am | Stop Time: 8:04 am

X coordinate, Y coordinate:

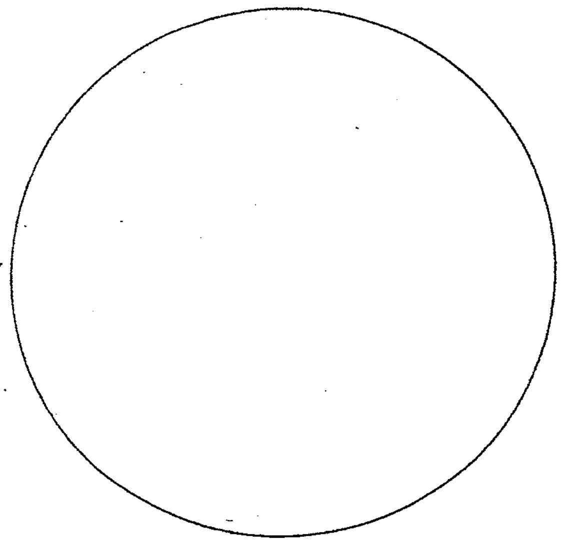
Observer: NG | Wind Spd.: 2 | Wind Dir.: NW | Sky: 0 | Temp: 65°F

Dominant (>50%) AES Habitat Type:

Other Habitats:

N

W



E

S

Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
FISP	P	SW	40 m	–	1 m	II					
SOSP	P	SE	5 m	–	2 m	I					
EUST	P	E	10 m	–	3 m	III					
YWAR	P	E/NE	20 m	–	2 m	I					
GBHE	F	W	100 m	N	20 m	I					
AMRO	P	W/NW	25 m	–	2 m	I					
AMGO	F	E	10 m	NE	5 m		II				
WIFL	P	E/NE	15 m	–	1 m		I				
CHSW	Fo/F	E, N	Var	W	3 m		III				
BAOR	P	E	15 m	–	2 m		II				♂ + ♀

PASSERINE - Bird Point Count Data Sheet

Project Name: ______ Sample Point ID # & Name: BUF 119 Pork Pie

Date: 8/24 Start Time: 0742 Stop Time: 0747 X coordinate, Y coordinate: ______

Observer: MM Wind Spd.: ______ Wind Dir.: SSE Sky: 25 Temp: 65 Dominant (>50%) AES Habitat Type: ______

Other Habitats ______

N

W E

S

Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
GRCA						II					
SOSP						II					
GBHE						I					
SAUS						I					
NRWS						IIII					
EUST						III					
TUVU						III					
RTHA						I					
BASA							I				
FISP							II				
CHSW							IIII III				
DOOR							I				
YWOR							II				

PASSERINE - Bird Point Count Data Sheet

BUF [illegible] 11-0543
Project Name

BUF 11 - OVER Hill N of [illegible]
Sample Point ID # & Name

11/22/11 | 1022 |
Date | Start Time | Stop Time

78.837367, 42.859970
X coordinate, Y coordinate

[illegible] | 5-10 | E | [illegible] |
Observer | Wind Spd. | Wind Dir. | Sky | Temp

[illegible]
Dominant (>50%) AES Habitat Type

Other Habitats [illegible]

N

W E

S

Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
AMCR	F	N	E	200	[illegible]	[illegible]					
[illegible]	F	SW	75	[illegible]	10			1			

- cont'd

PASSERINE - Bird Point Count Data Sheet

Project Name:

Sample Point ID # & Name: Buf 111 - Edge of Riverbend

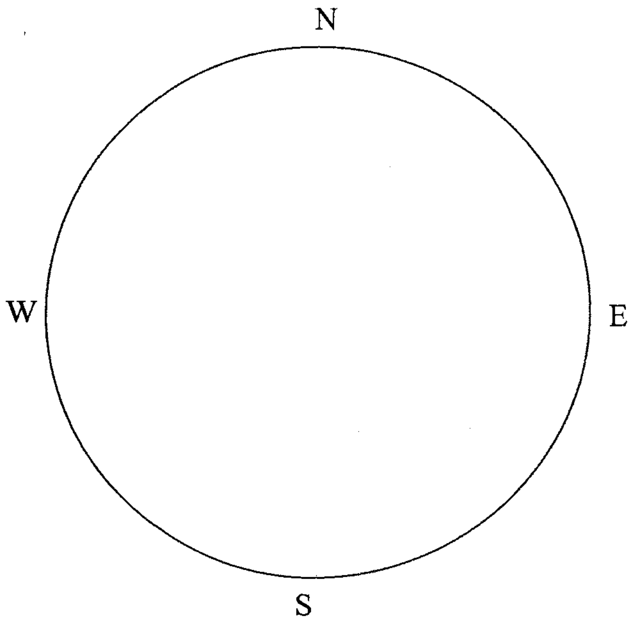
Date: [illegible]　Start Time: 1141　Stop Time: 1151

X coordinate, Y coordinate:

Observer: [illegible]　Wind Spd.: 0-1　Wind Dir.: [illegible]　Sky: 2　Temp: 30

Dominant (>50%) AES Habitat Type:

Other Habitats:



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes: cottontail 11

want to add Riverbend (access + drivability) [illegible]

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
EUST	P	E	150			30+					
AMCR	[illegible]	E	100				1				
KRGU	F	W	KM+	S	100m			11			
ATSP	F/P	SE	20	NW	10			1111			
AMCR		W	75	N	10			1111			

PASSERINE - Bird Point Count Data Sheet

BVF RW 11-0843
Project Name

BVF 111 - Abby St @ [illegible]
Sample Point ID # & Name

4/27/12
Date

8:20am
Start Time

[illegible]
Stop Time

[illegible]
X coordinate, Y coordinate

N6
Observer

3.9 mph
Wind Spd.

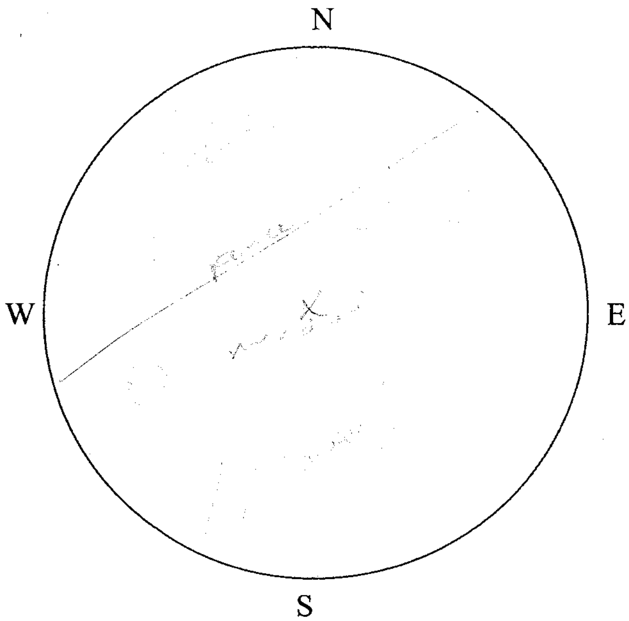
Wind Dir.

3
Sky

36.7°F
Temp

[illegible]
Dominant (>50%) AES Habitat Type

Other Habitats [illegible]



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

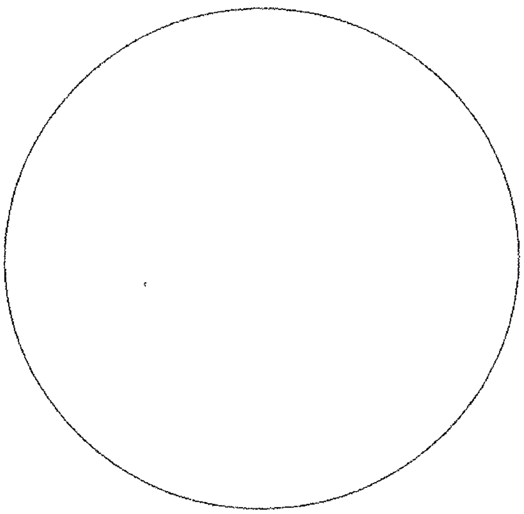
Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
CAGO	P		25m		0m	1	1				
RBGU	F		100+		—	11		1			
NOCA	P		15m		5m	1					
EUST	F/P		40m-25m		3m		11				
RWBL	P		25m-32m		1m		111				
AMCR	P/Fo		50m-82m				1	1			
MODO	F		ver		20m			1			
AMRO	P		60m		—			1			

PASSERINE - Bird Point Count Data Sheet

Project Name:	Sample Point ID # & Name: BUF 111-A
Date: 5/10/12	Start Time: 8:42 am
Stop Time: 8:52 am	X coordinate, Y coordinate:
Observer: NG/MM	Wind Spd.: 2
Wind Dir.: NW	Sky: 1
Temp: 51°F	Dominant (>50%) AES Habitat Type:
Other Habitats:	

N

W  E

S

Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
RWBL	P/C	NW	30m	—	1m	|	|	||			
CUST	P/C	NW	30m	—	1m	|	||				
SOSP	P/C	SW	25m	—	1m	|		|			
MODO	F	S	25m	W	10m	|					
CAGO	F	N	200m	W→E	50m	|||	||				
RBGU	[illegible]	[illegible]	[illegible]	[illegible]	—	||||	||				
AMRO	P	NW	50m	—	2m		|				
BARS	F	NW	40m	[illegible]	10m		||				
AMGO	F	SE	75m	—	2m		|				
KILL	[illegible]	[illegible]	50m	—	✓			|			
AMCR	P	W	100m	—	[illegible]			|			
NSW	P/F	NW	30m	W	1M			||			

PASSERINE - Bird Point Count Data Sheet

BUF RIV
Project Name

BUFF 111A (120/111) - Riverbend
Sample Point ID # & Name

6/5/12
Date

7:32
Start Time

7:37
Stop Time

X coordinate, Y coordinate

NG
Observer

2
Wind Spd.

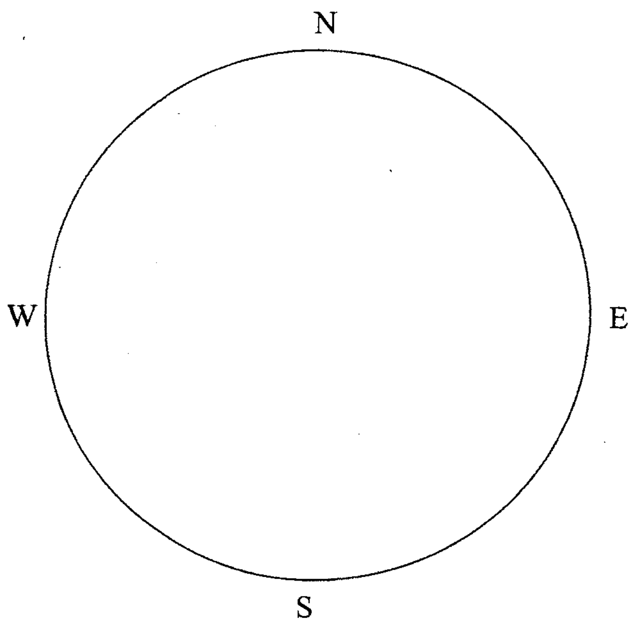
NE
Wind Dir.

0
Sky

54.3°F
Temp

Dominant (>50%) AES Habitat Type

Other Habitats



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
RWBL	P	NE	20 m	—	1 m	|||	|||				
YWAR	P	NE	15 m	—	2 m	|					
GRSP	P	Var	var	—	1 m	||					
SOSP	P	SE	20 m	—	1 m	||					
FISP	P	E/SE	40 m	—	1 m	|					
RBGU	F	N	60 m	W	20 m	|	|||				
KILL	P/Fo	SE	40 m	—	0 m	|					
CEDW	F	E	var	W/NW	20 m		10				
BARS	Fo	NE	var	SW	1 m		||				
AMGO	F	E	Var	N/NE	5 m		|				

PASSERINE - Bird Point Count Data Sheet

BUFF RIV
Project Name

BUFF 111a - Riverbend / New Abbey St
Sample Point ID # & Name

6/15/12
Date

7:45 am
Start Time

7:50 am
Stop Time

X coordinate, Y coordinate

NRA
Observer

0
Wind Spd.

—
Wind Dir.

0
Sky

68.5°F
Temp

Dominant (>50%) AES Habitat Type

Other Habitats

N

W

E

S

Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
RWBL	P	N/NW	20-30m	—	1m	~~IIII~~	II				
SOSP	P	SE	20m	—	1m	III					
WITU	P/Fo	SW	65m	—	0m	II					
GRSP	P	E/NE	35m	—	0m	II					
HOLA	P	E/NE	25m	—	0m	I					
RBGW	F	W	var	S	25-75m	~~IIII~~	IIII				
WIFL	P	NE	60m	—	1m		I				
NRWS	Fl	W	75m	S	5m		III				
											* 2 dead TRSW on ground near pt.
											* Walking out - Eastern Cottontail Rabbit

PASSERINE - Bird Point Count Data Sheet

BUFF RIV
Project Name

BUFF – 111a
Sample Point ID # & Name

6/27/12
Date

7:43 am
Start Time

7:48 am
Stop Time

X coordinate, Y coordinate

NG
Observer

2
Wind Spd.

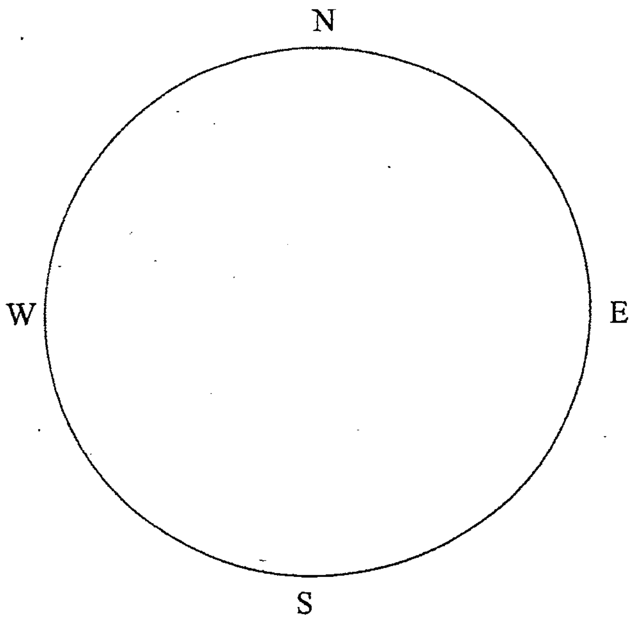
W/NW
Wind Dir.

0
Sky

63°F
Temp

Dominant (>50%) AES Habitat Type

Other Habitats



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
BHCO	P/F	W/SW	10m	W	0-5m	卌 ll					
GRSP	P	SW	20m	—	0m	l	l				
SOSP	P	NE	15m	—	2m	l					
AMRO	P	N	25m	—	3m	l					
FISP	P	W/NW	40m	—	1m	l					
CHSW	Fo	W	10-25m	S,SW	2-10m	l	lll				
SAVS	P	NE	20m	—	1m		ll				

PASSERINE - Bird Point Count Data Sheet

Project Name: BNR WS

Sample Point ID # & Name: BUF 120 Riverbend Central

Date: 5/11/12

Start Time: 0743

Stop Time: 0753

X coordinate, Y coordinate:

Observer: [illegible]

Wind Spd.: 1

Wind Dir.: NW

Sky: 0%

Temp: 54°

Dominant (>50%) AES Habitat Type: G-land / Disturbed

Other Habitats:

N

W E

S

Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
SAVS	C	E	300			1					
RWBL	C/F	SW	40			25					
EUST	C/F	NW	50			15					
SECR	C	NW	60			1					
AMRO	C	N	75			1					
FISP	C	N	150			1					
HOLA	C	NW	120				1				
SOSP	C	N	100				1				
GRSP	C	NNW	150				1				
SOVS	C	NW	30				1				
HOLA	C	W	75					1			
FISP	C	W	75					1			
BBCU	C	SE	150					1			
BBCU	F	N	300	N	50			111			
SAVS	C	N	75					1			
BRCO									16		
KILL	P/ND	SSE	100						11		(Found nest) CN
				~~+ KILL Nest + 2 adults~~							

PASSERINE - Bird Point Count Data Sheet

BUF RIV 11-0593 — Project Name

BVF 120 – Riverbend — Sample Point ID # & Name

4/2/12 — Date

9:15 am — Start Time

9:25 am — Stop Time

X coordinate, Y coordinate

NG — Observer

1.6 mph — Wind Spd.

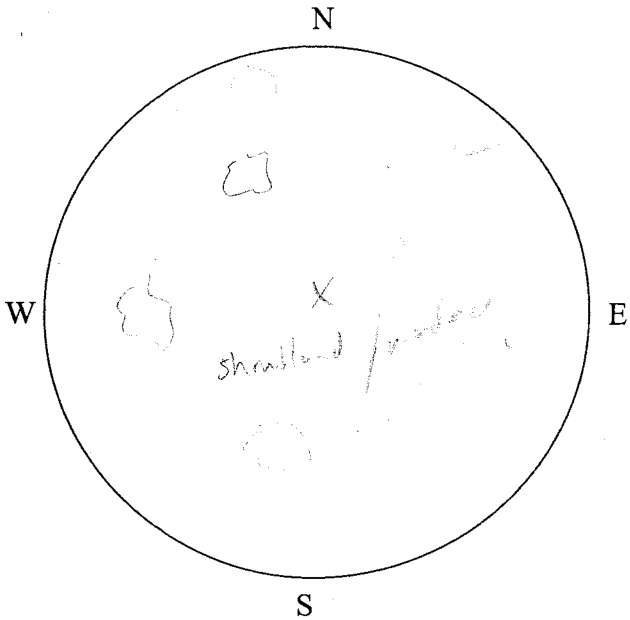
Wind Dir.

3 — Sky

36.9°F — Temp

Upland scrub/shrub — Dominant (>50%) AES Habitat Type

Other Habitats: Grassland / Barren land



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
AMRO	P		[illegible]		–	11		1			
SOSP	P/K		[illegible]		–	1		1			
RBGU	F		[illegible]		[illegible]		1	111			
EUST	Fo		[illegible]		[illegible]		200				probably same flock from 121
FISP	P		60m		[illegible]			11			
										Coyote scat

PASSERINE - Bird Point Count Data Sheet

Project Name:	Sample Point ID # & Name: BWF 11)/120
Date: 8/24/12	Start Time: 0752
Stop Time: 0757	X coordinate, Y coordinate:
Observer: M	Wind Spd.: 2
Wind Dir.: SSE	Sky: 2.5
Temp: 65	Dominant (>50%) AES Habitat Type:
Other Habitats:	

N

W E

S

Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes: DEER

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
TUVU						𝍸 I					
SAVS						II					
FISP						I					
WITA						𝍸					
COYE						II					
BRTH							I				
AMRO							III				
WOWI							I				
BOOR							I				
NOFL							I				
PIWO	F/O						I				

PASSERINE - Bird Point Count Data Sheet

BUF RIV 11-0543
Project Name

BUF R1 - Riverbend (near Lodge)
Sample Point ID # & Name

[illegible]
Date

9:00 am
Start Time

9:10 am
Stop Time

X coordinate, Y coordinate

NC
Observer

4.0 mph
Wind Spd.

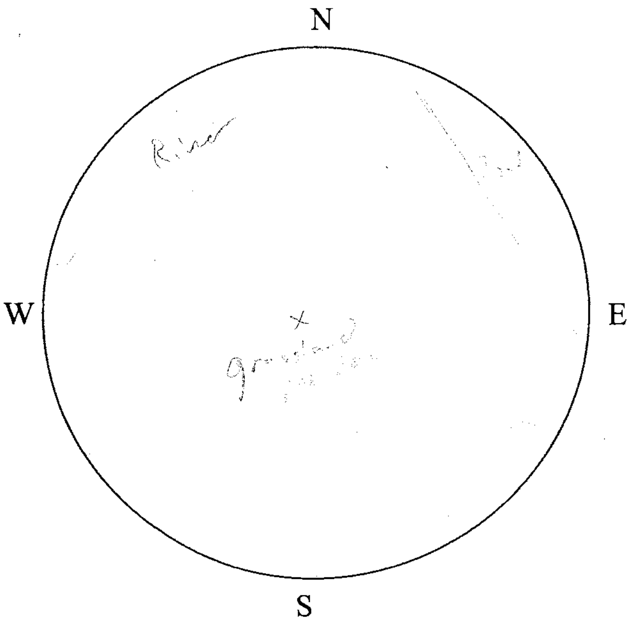
Wind Dir.

3
Sky

37.5 °F
Temp

Grassland
Dominant (>50%) AES Habitat Type

Other Habitats Open Water; Developed



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
MODO	F	var	var		5m	|					
EUST	Fo		var		0m	~20					flock
NOFL	P/F		var		[illegible]	|					
GULL	F		var		var		|||				unk spp
RWBL	P		100m		—		|				
CAGO	Fo		70m		0m		|				
SAVS	P		[illegible]		[illegible]		||	|			
AMCR	F		var		var			|			
HOLA	P		35m		0m			|||			2 singing ♂'s
											Fox or Woodchuck Den

PASSERINE - Bird Point Count Data Sheet

Project Name: BWF BNR AOC

Sample Point ID # & Name: BUFF 121

Date: 5/10/12

Start Time: 0826

Stop Time: 0836

X coordinate, Y coordinate:

Observer: [illegible]

Wind Spd.: NW ⟷

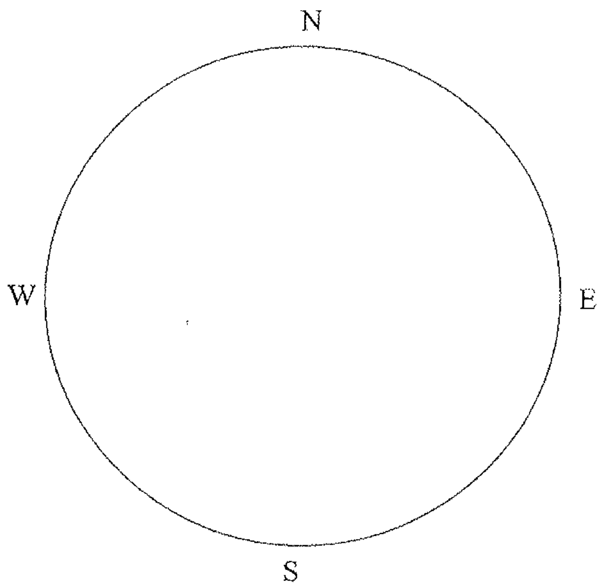
Wind Dir.: 2

Sky: 75%

Temp: 55°

Dominant (>50%) AES Habitat Type:

Other Habitats:



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
KILL	C	N	150			1					
EUST	F	N	200		[illegible] →						
HOLA	[illegible]	S	50			11					
GRSP	C/T	S	25			11					
RBGU	F	N	300	W	100	7					
BARS	F	NE	15	SW	1m	[illegible]					
NRWS	F	SW	50	VAR	3m	10					
GRCA	C	W	75				1				
AMGO	C	N	150				1111				
TRES	F/Fo	W	100	Var	Var		11				
SOSP	P	W	20m	—	2m			1			
YWAR	C/L	NW	75m					1			
NOCA	C	W	200					1			
GRSP	C/T	N	100					1			
AMRO	F	S	750	W	15			1			

PASSERINE - Bird Point Count Data Sheet

BNR WS
Project Name

BUF 171 Riverbend N
Sample Point ID # & Name

5/11/12
Date

0800
Start Time

0810
Stop Time

X coordinate, Y coordinate

Mm
Observer

1
Wind Spd.

NW
Wind Dir.

0
Sky

54°
Temp

Dominant (>50%) AES Habitat Type

Other Habitats

N

W

E

S

Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (~~ft~~ or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
GRSP	C	NW	5			I					
YWAR	C	NW	25			I					
SASP	C	NE	150			I					
HOLA	C	E	20			I					
BARS	Fo	N	20	NW var	10	I					
NRWS	Fo	N	30	NW var	10	I					
HOLA	C	W	50			I					
GRSP	C	S	20			I					
SPSA	C/F	WNW	150	E	4	I	IIII I				
TESS	Fo	N	20	NE/var	10		I				
YWAR	C	N	300				I				across river
GBHE	F	NW	400	S	20			II			
RBGU	F	VAR	VAR	VAR	30	75 →					
CHSW	F	NE	200	S	25			I			
EAKI	P/F	N	300					II			pair across river
NOMO	P	N	15					I			

PASSERINE - Bird Point Count Data Sheet

Project Name: BUF RIV

Sample Point ID # & Name: BUFF 121 - [illegible]

Date: 6/1/12

Start Time: 7:21 am

Stop Time: 7:26 am

X coordinate, Y coordinate:

Observer: NG

Wind Spd.: 2

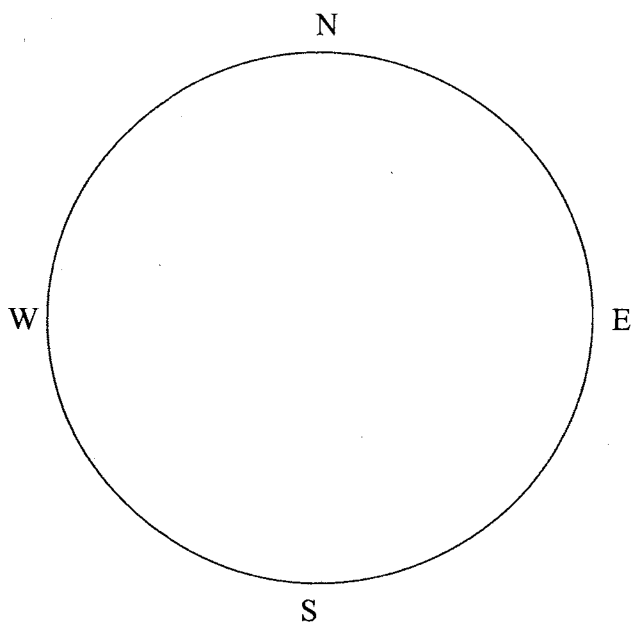
Wind Dir.: NE

Sky: 0

Temp: 54°F

Dominant (>50%) AES Habitat Type:

Other Habitats:



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
SAVS	P	var	var	—	1m	III	IIII				
AMGO	F	E	10m	N	3m	I					
YWAR	P	W	50m	—	2m	I	I				
NRSW	Fo	W/NW	[illegible]	[illegible]	1m	III					
GRSP	P	E/SE	35m	—	1m	II					
RBGU	F	var	var	NE/E	50m		4				

PASSERINE - Bird Point Count Data Sheet

Project Name: BUFF RIV

Sample Point ID # & Name: BUFF 121 - Riverbend

Date: 6/15/12

Start Time: 7:28am

Stop Time: 7:33am

X coordinate, Y coordinate:

Observer: NG

Wind Spd.: 0

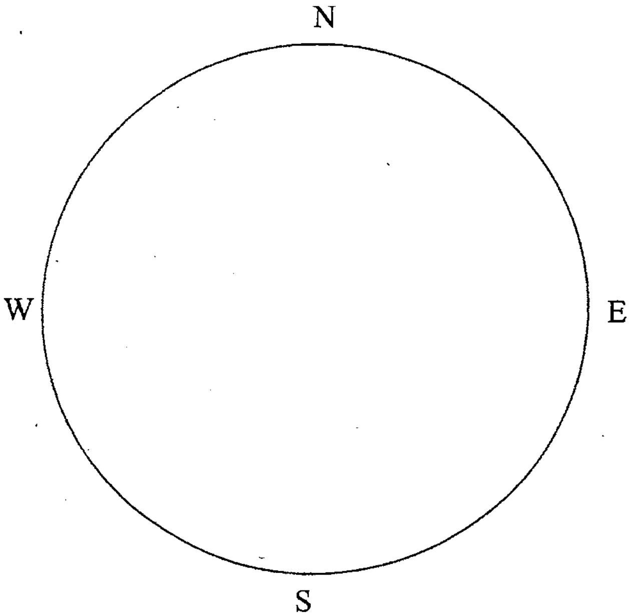
Wind Dir.: –

Sky: 0

Temp: 68.2°F

Dominant (>50%) AES Habitat Type:

Other Habitats:



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
GRSP	P	N, SE	Var	–	1m	III					
NRWS	Fo	W.	25m	N	5m	II					
SAVS	P	NE	30m	–	1m	I					
SPSA	P/F	W	Vm	–	0m-5m	III					
EAKI	P	NW	30m	–	1m	I					
CAGO	P	NW	100m	–	0m	~~IIII~~					
AMRO	P	E	70m	–	3m	I					
YWAR	P	N/NW	45m	–	1m		I				
TRSW	Fo	N	25m	Var	2m		II				

PASSERINE - Bird Point Count Data Sheet

BUFF RIV
Project Name

BUFF 121 - Riverbend
Sample Point ID # & Name

6/27/12
Date

7:28 am
Start Time

7:33 am
Stop Time

X coordinate, Y coordinate

NG
Observer

2
Wind Spd.

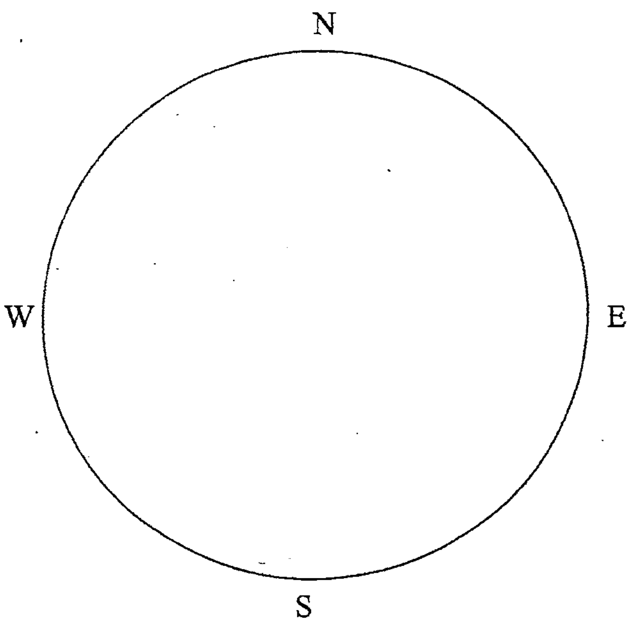
W/NW
Wind Dir.

0
Sky

61.6°F
Temp

Dominant (>50%) AES Habitat Type

Other Habitats



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
HOLA	F	W,NW	25m	N	1m	III					
MALL	P	NW	70m	—	0m	I					
CHSW	Fo	W	var	N,NW	1-5m	II					
SAUS	P	NE,E	10-35m	—	1m	III					
EUST	F	W	10m	N,S	1-2m	III					
GRSP	P	N	50m	—	1m	II					
RBGU	F	W	var	W,N	var	II	III				
SOSP	P	W/SW	60m	—	1m		I				

PASSERINE - Bird Point Count Data Sheet

Project Name: ____________________

Sample Point ID # & Name: BUF 121

Date: 8/24 | Start Time: 0813 | Stop Time: 0818

X coordinate, Y coordinate: ____________________

Observer: mgr | Wind Spd.: 1-2 | Wind Dir.: S | Sky: 25 | Temp: 66

Dominant (>50%) AES Habitat Type: ____________________

Other Habitats____________________

N

W E

S

Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

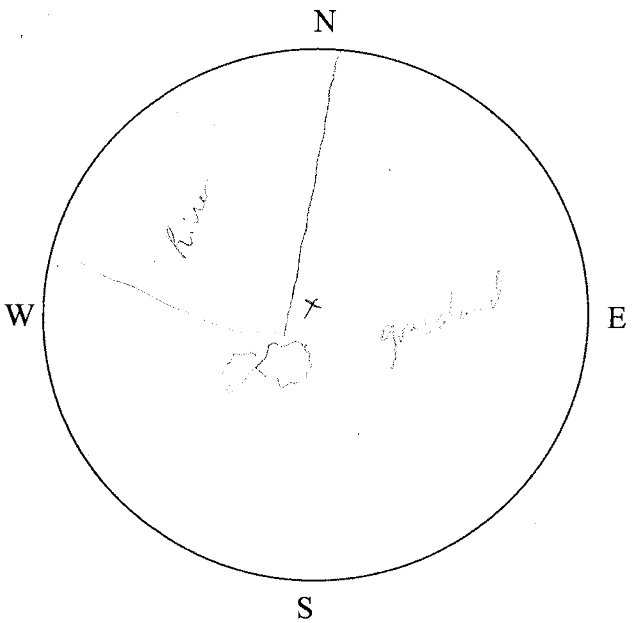
Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
GRSP						|||					
LAUS						||||					
YWAR						||					
SASA						|||					
EAKI						||					
TRES						~~||||~~						
MALL						||					
HOLA								1				
RBGU							26				
TUVU							3				
RTHA							2				
EUST							20				
CEDW							6				

PASSERINE - Bird Point Count Data Sheet

Project Name: BUF RIV 11-0543	Sample Point ID # & Name: BUF 122 - Riverbend (on river)
Date: 4/27/12	Start Time: 8:45 am
Stop Time: 8:55 am	X coordinate, Y coordinate:
Observer: NB	Wind Spd.: 3-8 mph
Wind Dir.:	Sky: 3
Temp: 37.3°F	Dominant (>50%) AES Habitat Type: Grassland

Other Habitats: Open water



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
CAGO	P		70 m		2 m	11	11				
RBGU	F		20 m +		var	11					
TRSW			[illegible]		var	111					
AMRO	P		30 m		~	1					
MALL	P		100 +		0 m		11				
SAVS	P		40 m		0 m		11				2 ♂ singing
AMGO	F		-		-			1			
SAVS	4										
KILL	2										Coyote scat - walking in
F[illegible]											[illegible]

walking from pt

PASSERINE - Bird Point Count Data Sheet

Project Name:

Sample Point ID # & Name: [illegible]

Date: [illegible] | Start Time: 8:03 am | Stop Time: [illegible]

X coordinate, Y coordinate:

Observer: [illegible] | Wind Spd.: 1-2 | Wind Dir.: NW | Sky: 1 | Temp: 48°F

Dominant (>50%) AES Habitat Type:

Other Habitats:

N

W

E

S

Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
SOSP	P	SW	20m			1					
GBHE	F	200m				1					
GRSP	P	NE	150m	—	0m	1	1	1			
RWBL	P	var	[illegible]	—	[illegible]	11					
[illegible]	P					11					
NRWSW	Fo	SW				11					
CAGO	F				[illegible]	[illegible]					
HOLA	P	[illegible]	100m			1					
COGR	F	W	70m	N	15m	1					
SAVS	P	N/W	100m	—	0m		11				
KILL	F	E	50m	—	1m		1				
AMKE	Fo	W	30m				1				
SPSA	Fo	W				1					
SPSA	Fo	W	75m					1			
NOCA	P/E	S	100m					1			
TRES	F/Fo	~	20m	~	~		1				
RBGU	F	[illegible]	[illegible]	—	—			15+			
											2 - R [illegible]
											GRSP, [illegible] WITU
											[illegible]
											[illegible]

PASSERINE - Bird Point Count Data Sheet

BUF WS
Project Name

BUF 122 [illegible] West
Sample Point ID # & Name

5/11/12
Date

0524
Start Time

0834
Stop Time

X coordinate, Y coordinate

[illegible]
Observer

1
Wind Spd.

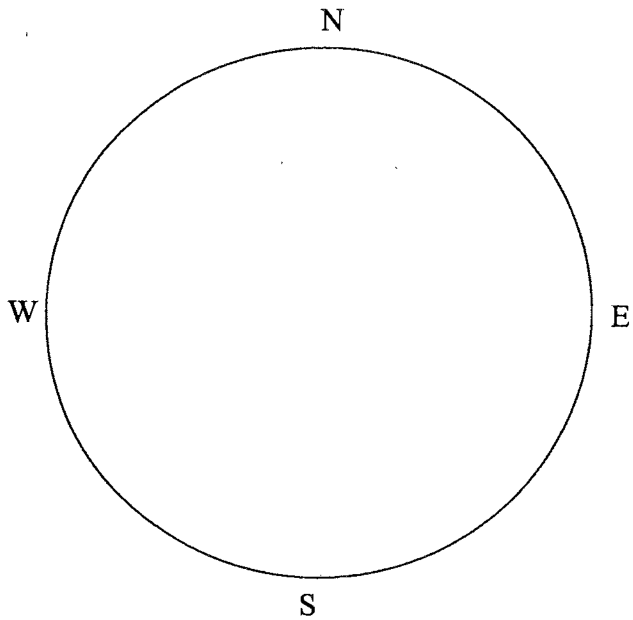
NW
Wind Dir.

0
Sky

56°
Temp

Dominant (>50%) AES Habitat Type

Other Habitats



Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
SPSA	Fo				1	II					
COGR	C	E	200			I					
RBGU	F	NE	500	N	50-100	~~IIII~~ I					
RWBL	C	W	10			II					
CAUS	C	S	50			I					
HOLA	C	SE	50			I					
YWAR	C	SW	100				I				
BOBO	C	S	100				I				full song
BRTH	C	SW	200				I				
CAGO	P	N	400				IIII				
GRSP	C	E	100				I				
AMCR	F	W	100	N	30			II			
NRWS	Fo	E	100	var	10			~~III~~			
BARS	Fo	N	20	var	10			I			
TRES	Fo	NE	75	var	20			III			
EABL	E/P	E	500					III			
BAOR	E/P	SE	700					I			

PASSERINE - Bird Point Count Data Sheet

Project Name: BUF RIV
Sample Point ID # & Name: BUFF 122 Riverbend
Date: [illegible]
Start Time: 7:10 am
Stop Time: 7:15 am
X coordinate, Y coordinate:
Observer: [illegible]
Wind Spd.: 2
Wind Dir.: NE
Sky: 0
Temp: 59.2°F
Dominant (>50%) AES Habitat Type:
Other Habitats:

N

W E

S

Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
SAVS	P	Ver	5 m	–	1 m	III	I				
EAKI	P	SW	15 m	–	1 m	I					
SOSP	P	[illegible]	20 m	–	[illegible]	I					
HOWR	P	S	50 m	–	2 m	I					
GRSP	P	E	30 m	–	1 m	I					
SPSA	P	W	10 m	–	0 m	I	III				
MALL	F	E	Ver	W	3 m	II					
NOCA	P	SE	50 m	–	5 m		I				
											Walking [illegible]
											[illegible] kill

[illegible]

PASSERINE - Bird Point Count Data Sheet

BUFF RIV
Project Name

BUFF 122 - [illegible]
Sample Point ID # & Name

6/5/12
Date

7:14 am
Start Time

7:19 am
Stop Time

X coordinate, Y coordinate

NG
Observer

0
Wind Spd.

–
Wind Dir.

0
Sky

61.2°F
Temp

Dominant (>50%) AES Habitat Type

Other Habitats

N

W E

S

Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
GBHE	P	SW	25m	–	0m	I					
MALL	P	SW	20m	–	0m	I					
OSPR	F/Fo	W	Var	Var	50m	I					
SAVS	P	Var (w/E)	var	–	1m	III	I				
NRWS	Fo	E	30m	N/S	3m	II					
RBGU	P/F	N	75m	S	0m		I				
GRSP	?	NE	30m	–	1m		I				
SOSP	P	S/SE	25m	–	1m		I				
SPSA	P	N	35m	–	0m		II				
											*Walking in - GRSP, SAVS,
											SPSA
											- 4 [illegible] (2♂, 2♀)
											- 2 [illegible] WITU

PASSERINE - Bird Point Count Data Sheet

Project Name: BUFF RIV

Sample Point ID # & Name: BUFF 12.2 - Riverbed

Date: 6/27/12

Start Time: 7:17 am

Stop Time: 7:22 am

X coordinate, Y coordinate:

Observer: NG

Wind Spd.: 2

Wind Dir.: WNW

Sky: 0

Temp: 60.3°F

Dominant (>50%) AES Habitat Type:

Other Habitats:

N

W

E

S

Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
BARS	Fo	E	60m	var	0-1m	10-15					
DCCO	P	W	75m	—	0m	I					
SPSA	P/F	N,S	10-15m	var	0-2m	III	I				
[illegible]	P	S/SE	10-20m	—	0-1m	II	I				
CHSW	Fo	[illegible]	5-30m	var	0-5m	III					
SAVS	P	NE	25m	—	1m	II	I				
RBGU	F/Fo	N,NW	var	W	0-30m	III	II				
WITU	P/MD	S	60m	—	0m		I				♂ strutting [illegible]
											*Walking in. found
											snake → took pics
											- light brown, dark top
											of head, pinkish belly
											dark spots along back

~12" long

Northern Brown Snake

#306

PASSERINE - Bird Point Count Data Sheet

8
Project Name

BmF 122 Riverbend
Sample Point ID # & Name

8/24/12 Date | 0804 Start Time | 0809 Stop Time

X coordinate, Y coordinate

MM Observer | 2 Wind Spd. | SSE Wind Dir. | 2S Sky | 66 Temp

Dominant (>50%) AES Habitat Type

Other Habitats

N

W E

S

Wind	Sky	AES Habitat Type
0 = none	0 = <10% clouds	Developed
1 = 1-3mph	1 = partly cloudy	Cropland
2 = 4-7 mph	2 = mostly cloudy	Barren Land
3 = 8-12 mph	3 = overcast	Grassland
4 >12 mph	4 = rain	Upland Shrub-Scrub
	5 = fog	Upland Broadleaf Forest
Behavior		Upland Coniferous Forest
F = flying		Upland Mixed Forest
S = soaring		Wetland Forested
P = perching or on water		Wetland Shrub-Scrub
Fo = foraging		Wetland Emergent
MD = mating display		Open Water
O = other		

Notes:

Alpha Code	Behav. Code	Dir. from Point	Dist. from Point (m)	Flight Dir.	Ht. (ft or m)	0-3 min	3-5 min	5-10 min	10-15 min	15+ min	Notes
SPSA						3					
GRSP						2					
SAVS						3					
MALL						4					
GBHE						2					
RBGU						22					
CHSW							18				
TRES							7				
NRWS							5				
WITU							8				
DCCO							19				
TUVU							4				
RTHA							1				

0600 9/11/12 BNR

LAKE Erie 55° cool wind 1

101

KILL 1
BCNH 1
RBGU ~600 ← lifting off + heading to ... /upriver
HEGU ||||
~~SOSP~~ } flew across canal
~~SWSP~~

ABDU (6)
MALL (|||| |||| ||)
CAGO (|||| |||| |

GBHE 1

CATE |||||
DCCO |||| |||| |||| |||| |||| | (+25)
LAGU |||| |||

WTDEER (4) 1 doe, 3 fawn
mormonzeck 1

0700 SMITH ST. good very in pond lots of phrag

AMCR ||||
EUST ?
RBGU ||
DCCO 54
AMRO |||| ||||
GBHE ||
MALL ||||
MODO ||||
GRCA ||
CEDW |||| |||
CAGO |||| |||| |||| ||
NOFL
HOFI
BCCH
DOWO

110

119

PorkPie 730 sunny 50%

FISP |||| ||
SOSP ||
LISP |
AMGO |||| |||| |||
SAVS ||||
AMCR ||||
NOFL ||
GRCA |
RBGU ||
DOWO |
ROPI |
HOWR?

WT Deer
Monzeck

112
Baily Woods 750

GRCA |
NOCA |||
BTNW ||
RBNU |
COYE |
AMRO ||
BEK1 |
RBGU |
DCCO |
AMGO
RBGR
unid warbler ||
ABDU | F/O

Turkey
Raccoon
MINK
DEER

Baly Br. 114
ROPI ||||
RBGU ||
MALL ||

Baily Penn 113 0815 sunny
AMGO
GREA
CEDW
NOCA
DOWO
NOFL

Fox squirrel? brown / gray tail

pot. nesty for A spinks ?

vole sp. under board
(looked smaller than meadow vole)

0835 SBluffs 116

1 115
RBGU F/O ||||
ROPI |||| ||||
AMGO
GRGO(dom) |||| |||
MALL |||
AMRO |||
MODO ||||

wooden...
moth sp.
(pics)
monzeck

2 (+3/4 2+3)
AMRO
BCCH
SOSP
GRCA
LISP
SOSP
WODU
BLJA
NAWA
COWA?
CAWR
RBNU
PHVI
INBU
WIWR
BHVI
GCFL
YTVI
EUST
BEK1

HAWO
BBWA
COYE
MODO

3 117 overcast 66
NOCA
LEFL
REVI
WAVI
GRCA
EWPE
CUGE
BCCH

4 118
WAVI
AMGO
CAWR
AMKE
BLJA

dead mole
WTDEER
BEAVER
SKUNK

MINK

Riverbend

sunny w2 E
75% cc 66°

wI movsc

111/120

1
FISP I
RBGU III
BYA (from edge) II
AMCR IIII
CAGO II
GBHE I
WITU I
MERL I
NOFL I
SOSP
VCCP

121

2
GBHE I
AMCR ~~IIII~~
SAVS I
MERL II
AMKE I
MOLL ~~IIII~~ II
PBGR I
ABDU II

122

3
BSKI
GBHE
GADW II
VESP!
CAGO ~~IIII~~ II
ROPI I
SAVS I
GRSP? I
RTHA

mourning cloak
clouded sulphur
2 tailed blue
many grasshoppers snails
monarch
some dragonflys

wf mouse
~~family under board~~

WTDEER
4 doe
2 bucks

cottontail

T. brachystoma? 17 scale rows → neonate Thamnophis sp. see pics
1st line on 2nd + 3rd scales
and single
2 marks on parietals

(106)
1100 Kath St. N.
light wind (3)
sunny, warm
72°
AMCR
SOSP
ROPI
NOCA
BCCH

Kath St Repair
1120
(107/109)
WOOD F/O II
MALL F/O ~~IIII~~ I
DCCO
RBGU
AMRO
HOFI
snake sp flushed in klothen bow edge of path

Kath St. Riparian
1130
NOCA III
AMRO ~~IIII~~ I
GRCA II
AMGO III
CEDW ~~IIII~~
MALL ~~IIII~~ ~~IIII~~ ~~IIII~~ ~~IIII~~ (resting on shore)
GBHE I
CAGO ~~IIII~~
AMWI I

CATE

cabbage white
noun clo
monarch
(108)

raccoon

1145 (104)
Ohio St.
AMCR III
AMRO I
HOSP ~~IIII~~ I
MALL ~~IIII~~
RBGU II
CAGO III
AMGO I
CATE I

102
RBGU ~~IIII~~ III
AMKE II
AMGO
HEGU II

1200 (105)
MIAMI ST.
DOWO
AMGO
AMCR
ROPI I

monarch
com buck
mon clo
cabwhi

many grasshoppers

ShipCanal (103)
1215 sunny 73° 50% cc wind 2
MALL (9) + (6)
ROPI (22)
ABDU (4) + (2)
RBGU III
RNDU (2)
GRHE I

AMCR (5)
BEKI
SOSP I
AMGO IIII
PAWA
CATE

Turtle sp. flushed from snag

common buckeye
cab whi
monarch
mon clo
clo sul

11A
WIMA
MAMA
AMPE
GBHE
GREG (8)
BCNH imm (7)
BWTE (23)
MALL
WODU
AMRO
GRCA
CAWR
NOCA
GRHE
Phalarope sp (2)
BWTE (16)

Blue
C p picta
C serpentina

Montezuma
GRYE
LEYE
BBPL
SEPL
COSN
SESA
LESA
WRSA ?
KILL
AGPL

RBGU
NRSH
BWTE
MALL
ABDU
PBGR
GBHE

10/16/12 BNR (N) 0701

BNR 101 windy, 3+1 42°

DCCO (150+) - S bound
RBGU (200+) - N + E bound
~~BAGU~~ ||||
Seaside sp |||
SAGU 1 (imm, pics?)
LEGU ? - not certain
UNPO |||| - chip notes
RTHA over bldg for ESE

102 wind 2 flowers

~~SEGU~~ ~~|||~~
~~MODO~~ ~~|||| ||||~~ || knapweed
~~AMCR~~ | buffer + ESSs
DEJU ||||
SOSP ||
CAGO
~~RBGU~~
DCCO

103 wind 1 (N) 0750 water is low

AMCR ||| E 100 P
MOLL P SE 75 |
DCCO P NNE 250 |
EUST F NE 150 N 20 (42)
CAGO F N 750 E 50 ||
DCCO F N 1 km W 100 |
RBGU F S 500 W 30 1

104 Olwest 0815

RBGU P N 25 |||| ||
DEJU C SE 50 ||
MODO P W 25 |
WTSP C N 20 ||
AMRO C N 75 |
ROPI F W 100 N 15 (46)
RBGU P SW 150 |||| |||| |
RCKI F, S 70 2m |
GCKI C S 25 |||
COHA. C, F, M2 W 10 var 25 || (male + female) chasing
AMCR P SSE 200 |
EUST P SSE 200 ||

Carfoot calls from trees to E (crest tree?)

105 MDM 46°

HOSP C N 50 |||| |
OMRO C E 20 |||
EUST P E 75 ||
AMRO F E 25 NW 20 |
AMCR P WSW 10 |||| in street
RBGU F SW 50 NE 5 |||
DUNO C S 200 |
WTSP C N 75 |
ROPI F WNW 150 E 50 ||||
CAGO F N 50 S 25 ||||

10/16 cont'd

106 Kahat N 0846 DEER TRACKS

AMRO		NW	75	1	
AMCR		NW	150	11	
RBGU	F	N 100	W 20	1	(not used 1st bird prob)
RBGU	F	W 200	N 100 (w red/in bill)	1	
ROPI	F	W 25	E 10	1	
DOCR	F	W 150	N 5	1	
RBGU	F	E 100	E 15	1	

107 Koch St Penin 0905

AMGO	F/C	NW 75	N 20	11	
CAGO	C	W 250		11	
WTSP	C	N 75	–	111+	
RBGU	F	S 100	E 20	11	
CUST	P	S 200		1111	(on metal tower)
COYE	C	N 15		1	

0915

109 small area of knotweed burned

NOCA	W	111	
DEJU	N	1111	mostly forage in
~~EAPH~~	NW	1	ground story beneath
BCCH	W	111	
WTSP	NW	(25+)	scenes and Jap kno
~~GCKI~~	W	1	
SOSP	N/W	1111 11	Hobo bunker is
DOCO	F SW 25	1	installed w soil
AMGO	P N 20	1111	
EUST	F W 250 N 100	1111	
~~DOWO~~	F N 25	1	
BEKI	C S 50	1	

110 Smith Rd. 1020 47°

DEJU	F	SW	20	E	2	~~1111~~ 1	
GBHE	P	S	100	—		1	
AMGO	P	N	20			111	
AMRO	P/C	W	50			11	
BCCH	C	N	100			1	
DCCO	SE	500		—		1	
COYE	C	W	200			1	
ROPI	F	W	100	E	20	1	
AMCR	C	NW	250			1111	
RBGU	F	N	20	W	20	1	
HOWR	C	W	160	—		1	RWBL 22 N 70 W 25
CHSW						1	

Riverbend #1 (111/120, 121/122)

SOSP	C	E	100			1	wt Deer scat
TUVU	F	S	200			1	
OSPR	F	N	25			1	
GBHE	F	W	150			11	
GBHE	F	S	200			1	
WTSP	C	E	10			111	
WTSP	C	E	50			1	
NAWA	P	E	50			1	
GBHE	F	S	200	S	10	111	
AMKR	F	S	250	W	20	1	
RBGU	F	S	200	N	40	11	
ATSP						~~1111~~ 1	
COYE						1	

10/16 cont'd

Baily St. Woods (112)

BCCH	卌I	
GCKI	卌I	
AMRO	II	
RBGU	IIII	
DCCO P	II	
WTSP	卌/卌II	
YRWA	II	
DOWO		
BPWA		
BRCR		
RCKI		
WBNU		

Seneca Bluff 1300

(115-118)

mert bezuer

TUVU	~~BCCH~~	
WTSP	RBGU	
~~BCCH~~	BLJA	
NOCA	RBWO	
AMCR		/
YEWA	卌卌卌IIII	
GCKI		
DOWO		
AMGO		
MALL		

PorkPie (119) 1330

DEJU	WTSP	DCCO
GBHE	WCSP	MODO
~~NAWA~~	RBGU	GCKI
SOSP	HEGU	RTHA
LISP	~~CAGO~~	ATSP
COYE	MALL	TUVU

Bailey St Penin (113) 1400

BCCH
PUFI ♀
SOSP
WTSP
BLJA
AMRO
CAGO
~~BEKI~~
ROPI
EUST
~~RWBL~~
COGR
AMCR

Baily St. Bridge (114) 1415

CAGO	10
RBGU	22
COHA	1
HOSP	12
HOFI	6

10/18/12 (wed) 0700
Seneca Bluffs (115-118)

CAGO P N 150 (36) on water
SOSP SK N 20 1
WTSP C E 30 ////
MODO F N 20 E 10 1
SOSP W 10 1
MALL P N 130 (2)
BAGO P N 150 (6) (actual Greater WF Geese?)
AMCR F S 200 S 50 (14)
AMRO
GCKI
RCKI
YRWA
GOYE
NAWA
BRCR
WBNU
RBNU
BCCH
RWBL
SSHA
EAPH
RBGU F W 100 E 25 (~~HH~~ ~~HH~~ ~~HH~~ ~~HH~~ ~~HH~~ ~~HH~~ ~~HH~~ ///)
DEJU
NOFL

Bridge st (114)
Many RBGU AMRO
HEGU RWBL
DEJU CAGO
WTSP MALL
NOCA

(113) 0735
Barley St Reserve

AMRO SE ///
DEJU E ~~HH~~ //
WTSP E ~~HH~~ ~~HH~~ //
SOSP E //
AMGO SW ///
DCCO F/P NE 1
CAGO P NE 7
HOSP
EUST
HEGU
ROPI (7)
DOWO
CEWA

recent beaver
rabbit
squirrel
white pine plantings
some Jap knotweed maint.
Box elder + ailanthus (remove)
some oak resprouts
& mature
LG cranberry bldg
back Jap knot
Lg gull congregation
at ballfield across st.

Barley Woods (112)
BCCH (many!)
WTSP
DOWO
NOCA
YRWA
COHA adult male
RWBL (22+)
BEKI
RBGU
DCCO

Deer
raccoon
mink
cat
skunk
live zebra mussels
old asiatic clam

Pork Pie (119)
CAWR
WTSP
AMGO C
AMCR
EUST.

RWBL F NW 200 SE 100 (120+)
AMRO F W 100 E 20 2
OBHE P SE 100 1

(105) (MIAMI St)
HOSP AMRO
DOWO
NOCA
COHA
WTSP
EUST

(104) OHIO ST
CAGO RCKI
RBGU AMCR
COHA
HOSP
HOFI
EUST
SOSP

(103) Slip (CANAL)
MALL
DCCO
GBHE
PAWA
SOSP

Tres Bend
BCCH
YRWA
OCWA 11
RWBL
CAGO
MALL
ABDU
TOFA SP (
AMGO (CORR OF ARTERIES)
NOCA
AMRO
DCCO
RBGU
DOWO
BPWA

(102) Billboard
ATSP
DEJU
AMGO
~~RBGU~~
TUVU
DCCO

(101)
RBGU
COTE
BOGU
HEGU
DCCO
BLSC
SOSP
DEJU
PISI
UNPA (MIGRANTS)
COLO
MALL
ABDU

Riverbend Collective (111/120, 121, + 122)

TUVU
RTHA
BASA (MIG)
SOSP
ATSP
WTSP
WITU
AMRO
COYE
NAWA
OCWA
YRWA
BPWA
SSHA (MIG)
COHA (MIG?)
WBNU
RBGU
DCCO

AMGO
DOWO
RWBL
COGR
RUBL
GBHE
VESP

deer
coyote scat
feral cat
rabbit

10/17/12 cont'd

SMITH ST (110)
AMGO
COYE
SOSP
WTSP
AMRO
ROPI
DEJU
OCCO
AMCR
BCCH
TUTI
MODO
BLJA
RWBL
MALL
GBHE (on river)
CAGO
RBGU
COGR
MERL

raccoon tracks
WT DEER
ST SHREW (Edge of Pond)

Koth St N (106)
RBGU
NOCA
BCCH
CAGO

Koth St Penin
(107/109) (Follow field)
WTSP EUST
SOSP
AMGO
AMCR
WODU (F/O)
MALL
CAGO (F/O)
TUVU

(108) (Rip forest)
YRWA SOSP CEDW
NAWA DEJU RWBL
GCKI NOCA COGR
RCKI BLJA
BCCH MALL
TUTI RBGU
WTSP EUST
WESP
OCWA TUVU
COYE MODO

Calling Amphibian Survey

Project Location: 09-0543 BNR LBR AOC **Survey Date:** 4/3/12

Calling Location ID: 301 **Surveyor(s) Initials:** NG

Time START	10:41 PM	Time STOP	10:4_ PM	Photo(s) Taken?

Climatic Variables

Amb Temp (^{0}C) 47°F Sur Temp (^{0}C) ______

Amb RH (%) ______ Sur RH (%) ______

Circle One: (refer to codes on back)

Precipitation Code	0	1	2	3	4*	5*
Beaufort Wind Code	0	1	2	3	4*	5*

* - unsuitable to perform survey

Wildlife Observations

Calling Amphibians	Calling Intensity Code (refer to code on back)				# of Individuals
American Toad *B. americanus*	0	1	2	3	
Fowler's Toad *B. fowleri*	0	1	2	3	
Chorus Frog *P. triseriata*	0	1	2	3	
Spring Peeper *P. c. crucifer*	0	1	2	3	
Wood Frog *L. sylvatica*	0	1	2	3	
N. Leopard Frog *L. pipiens*	0	1	2	3	
Pickerel Frog *L. palustris*	0	1	2	3	
Gray Treefrog *H. versicolor*	0	1	2	3	
Cricket Frog *A. crepitans*	0	1	2	3	
Green Frog *L. c. melanota*	0	1	2	3	
Bullfrog *L. catesbeiana*	0	1	2	3	
Additional Amphib sp.	0	1	2	3	

Additional Species and Wildlife Observations: Nothing

- Again no [illegible]

Applied Ecological Services, Inc.

Calling Amphibian Survey

Project Location: 09-0543 BNR LBR AOC **Survey Date:** 4/3/12

Calling Location ID: 202 **Surveyor(s) Initials:** [illegible]

Time START	10:30 PM	Time STOP	10:35 PM	Photo(s) Taken?	—

Climatic Variables

Amb Temp (^{0}C) 47°F Sur Temp (^{0}C) ______

Amb RH (%) ______ Sur RH (%) ______

Circle One: (refer to codes on back)

Precipitation Code	0	1	2	3	4*	5*
Beaufort Wind Code	0	1	2	3	4*	5*

* - unsuitable to perform survey

Wildlife Observations

Calling Amphibians	Calling Intensity Code (refer to code on back)				# of Individuals
American Toad *B. americanus*	0	1	2	3	
Fowler's Toad *B. fowleri*	0	1	2	3	
Chorus Frog *P. triseriata*	0	1	2	3	
Spring Peeper *P. c. crucifer*	0	1	2	3	
Wood Frog *L. sylvatica*	0	1	2	3	
N. Leopard Frog *L. pipiens*	0	1	2	3	
Pickerel Frog *L. palustris*	0	1	2	3	
Gray Treefrog *H. versicolor*	0	1	2	3	
Cricket Frog *A. crepitans*	0	1	2	3	
Green Frog *L. c. melanota*	0	1	2	3	
Bullfrog *L. catesbeiana*	0	1	2	3	
Additional Amphib sp.	0	1	2	3	

Additional Species and Wildlife Observations: No Calls

- Lots of Road noise

[illegible]

Applied Ecological Services, Inc.

Calling Amphibian Survey

Project Location: 09-0543 BNR LBR AOC **Survey Date:** 4/3/12

Calling Location ID: 203 - Ship Pond **Surveyor(s) Initials:** NG

Time START	10:17 PM	**Time STOP**	10:27 PM	**Photo(s) Taken?**	–

Climatic Variables

Amb Temp (°C) 47°F Sur Temp (°C) ______

Amb RH (%) ______ Sur RH (%) ______

Circle One: **(refer to codes on back)**

Precipitation Code	0	1	2	3	4*	5*
Beaufort Wind Code	0	1	2	3	4*	5*

* - unsuitable to perform survey

Wildlife Observations

Calling Amphibians	Calling Intensity Code (refer to code on back)				# of Individuals
American Toad *B. americanus*	0	1	2	3	
Fowler's Toad *B. fowleri*	0	1	2	3	
Chorus Frog *P. triseriata*	0	1	2	3	
Spring Peeper *P. c. crucifer*	0	1	2	3	
Wood Frog *L. sylvatica*	0	1	2	3	
N. Leopard Frog *L. pipiens*	0	1	2	3	
Pickerel Frog *L. palustris*	0	1	2	3	
Gray Treefrog *H. versicolor*	0	1	2	3	
Cricket Frog *A. crepitans*	0	1	2	3	
Green Frog *L. c. melanota*	0	1	2	3	
Bullfrog *L. catesbeiana*	0	1	2	3	
Additional Amphib sp.	0	1	2	3	

Additional Species and Wildlife Observations: Nothing

Applied Ecological Services, Inc.

Calling Amphibian Survey

Project Location: 09-0543 BNR LBR AOC **Survey Date:** 4/3/12

Calling Location ID: 204 **Surveyor(s) Initials:** NG

Time START	1056	**Time STOP**	10:11pm	**Photo(s) Taken?**	—

Climatic Variables

Amb Temp (^{0}C) 46°F Sur Temp (^{0}C) ______

Amb RH (%) ______ Sur RH (%) ______

Circle One: **(refer to codes on back)**

Precipitation Code	0	1	2	3	4*	5*
Beaufort Wind Code	0	1	2	3	4*	5*

* - unsuitable to perform survey

Wildlife Observations

Calling Amphibians	Calling Intensity Code (refer to code on back)				# of Individuals
American Toad *B. americanus*	0	1	2	3	
Fowler's Toad *B. fowleri*	0	1	2	3	
Chorus Frog *P. triseriata*	0	1	2	3	
Spring Peeper *P. c. crucifer*	0	1	2	3	
Wood Frog *L. sylvatica*	0	1	2	3	
N. Leopard Frog *L. pipiens*	0	1	2	3	
Pickerel Frog *L. palustris*	0	1	2	3	
Gray Treefrog *H. versicolor*	0	1	2	3	
Cricket Frog *A. crepitans*	0	1	2	3	
Green Frog *L. c. melanota*	0	1	2	3	
Bullfrog *L. catesbeiana*	0	1	2	3	
Additional Amphib sp.	0	1	2	3	

Additional Species and Wildlife Observations: No calling anurans

—

Applied Ecological Services, Inc.

Calling Amphibian Survey

Project Location: ~~00~~-0543 BNR LBR AOC **Survey Date:** 4/3/12

Calling Location ID: 305 - M[illegible] **Surveyor(s) Initials:** UG

Time START	10:52 PM	**Time STOP**	10:57 PM	**Photo(s) Taken?**	—

Climatic Variables

Amb Temp (^{0}C) 47°F Sur Temp (^{0}C) ____

Amb RH (%) ____ Sur RH (%) ____

Circle One: **(refer to codes on back)**

Precipitation Code	0	1	2	3	4*	5*
Beaufort Wind Code	0	1	2	3	4*	5*

* - unsuitable to perform survey

Wildlife Observations

Calling Amphibians	Calling Intensity Code (refer to code on back)				# of Individuals
American Toad *B. americanus*	0	1	2	3	
Fowler's Toad *B. fowleri*	0	1	2	3	
Chorus Frog *P. triseriata*	0	1	2	3	
Spring Peeper *P. c. crucifer*	0	1	2	3	
Wood Frog *L. sylvatica*	0	1	2	3	
N. Leopard Frog *L. pipiens*	0	1	2	3	
Pickerel Frog *L. palustris*	0	1	2	3	
Gray Treefrog *H. versicolor*	0	1	2	3	
Cricket Frog *A. crepitans*	0	1	2	3	
Green Frog *L. c. melanota*	0	1	2	3	
Bullfrog *L. catesbeiana*	0	1	2	3	
Additional Amphib sp.	0	1	2	3	

Additional Species and Wildlife Observations: [illegible], lots of cars parked on street people walking around (after Sabres game)

Applied Ecological Services, Inc.

Calling Amphibian Survey

Project Location: 09-0543 BNR LBR AOC **Survey Date:** 4/3/12

Calling Location ID: 206 **Surveyor(s) Initials:** NG

Time START	9:47 PM	Time STOP	9:52 PM	Photo(s) Taken?	—

Climatic Variables

Amb Temp (^{0}C) 47°F Sur Temp (^{0}C) ______

Amb RH (%) ______ Sur RH (%) ______

Circle One: **(refer to codes on back)**

Precipitation Code	0	1	2	3	4*	5*
Beaufort Wind Code	0	1	2	3	4*	5*

* - unsuitable to perform survey

Wildlife Observations

Calling Amphibians	Calling Intensity Code (refer to code on back)				# of Individuals
American Toad *B. americanus*	0	1	2	3	
Fowler's Toad *B. fowleri*	0	1	2	3	
Chorus Frog *P. triseriata*	0	1	2	3	
Spring Peeper *P. c. crucifer*	0	1	2	3	
Wood Frog *L. sylvatica*	0	1	2	3	
N. Leopard Frog *L. pipiens*	0	1	2	3	
Pickerel Frog *L. palustris*	0	1	2	3	
Gray Treefrog *H. versicolor*	0	1	2	3	
Cricket Frog *A. crepitans*	0	1	2	3	
Green Frog *L. c. melanota*	0	1	2	3	
Bullfrog *L. catesbeiana*	0	1	2	3	
Additional Amphib sp.	0	1	2	3	

Additional Species and Wildlife Observations: Nothing

Applied Ecological Services, Inc.

Calling Amphibian Survey

Project Location: 00-0543 BNR LBR AOC **Survey Date:** 4/3/12

Calling Location ID: 207-209 **Surveyor(s) Initials:** NG

Time START	9:54 PM	**Time STOP**	9:59 PM	**Phot(s) Taken?**	—

Climatic Variables

Amb Temp (^{0}C) 47°F Sur Temp (^{0}C) ________

Amb RH (%) ________ Sur RH (%) ________

Circle One: **(refer to codes on back)**

Precipitation Code	0	1	2	3	4*	5*
Beaufort Wind Code	0	1	2	3	4*	5*

* - unsuitable to perform survey

Wildlife Observations

Calling Amphibians	Calling Intensity Code (refer to code on back)				# of Individuals
American Toad *B. americanus*	0	1	2	3	
Fowler's Toad *B. fowleri*	0	1	2	3	
Chorus Frog *P. triseriata*	0	1	2	3	
Spring Peeper *P. c. crucifer*	0	1	2	3	
Wood Frog *L. sylvatica*	0	1	2	3	
N. Leopard Frog *L. pipiens*	0	1	2	3	
Pickerel Frog *L. palustris*	0	1	2	3	
Gray Treefrog *H. versicolor*	0	1	2	3	
Cricket Frog *A. crepitans*	0	1	2	3	
Green Frog *L. c. melanota*	0	1	2	3	
Bullfrog *L. catesbeiana*	0	1	2	3	
Additional Amphib sp.	0	1	2	3	

Additional Species and Wildlife Observations: Nothing

Applied Ecological Services, Inc.

Calling Amphibian Survey

Project Location: 09-0543 BNR LBR AOC **Survey Date:** 4/3/12

Calling Location ID: 2D **Surveyor(s) Initials:** NG

Time START	9:35 PM	Time STOP	9:40 PM	Photo(s) Taken?	–

Climatic Variables

Amb Temp (^{0}C) 47°F Sur Temp (^{0}C) ______

Amb RH (%) ______ Sur RH (%) ______

Circle One: (refer to codes on back)

Precipitation Code	0	1	2	3	4*	5*
Beaufort Wind Code	0	1	2	3	4*	5*

* - unsuitable to perform survey

Wildlife Observations

Calling Amphibians	Calling Intensity Code (refer to code on back)				# of Individuals
American Toad *B. americanus*	0	1	2	3	
Fowler's Toad *B. fowleri*	0	1	2	3	
Chorus Frog *P. triseriata*	0	1	2	3	
Spring Peeper *P. c. crucifer*	0	1	2	3	
Wood Frog *L. sylvatica*	0	1	2	3	
N. Leopard Frog *L. pipiens*	0	1	2	3	
Pickerel Frog *L. palustris*	0	1	2	3	
Gray Treefrog *H. versicolor*	0	1	2	3	
Cricket Frog *A. crepitans*	0	1	2	3	
Green Frog *L. c. melanota*	0	1	2	3	
Bullfrog *L. catesbeiana*	0	1	2	3	
Additional Amphib sp.	0	1	2	3	

Additional Species and Wildlife Observations: No calling [illegible]

Applied Ecological Services, Inc.

Calling Amphibian Survey

Project Location: ●●-0543 BNR LBR AOC **Survey Date:** 4/3/12

Calling Location ID: 2 **Surveyor(s) Initials:** NG

Time START	8:51 PM	Time STOP	8:56 PM	Photo(s) Taken?	—

Climatic Variables

Amb Temp (°C) 48°F Sur Temp (°C) ______

Amb RH (%) ______ Sur RH (%) ______

Circle One: **(refer to codes on back)**

Precipitation Code	0	1	2	3	4*	5*
Beaufort Wind Code	0	1	2	3	4*	5*

* - unsuitable to perform survey

Wildlife Observations

Calling Amphibians	Calling Intensity Code (refer to code on back)				# of Individuals
American Toad *B. americanus*	0	1	2	3	
Fowler's Toad *B. fowleri*	0	1	2	3	
Chorus Frog *P. triseriata*	0	1	2	3	
Spring Peeper *P. c. crucifer*	0	1	2	3	
Wood Frog *L. sylvatica*	0	1	2	3	
N. Leopard Frog *L. pipiens*	0	1	2	3	
Pickerel Frog *L. palustris*	0	1	2	3	
Gray Treefrog *H. versicolor*	0	1	2	3	
Cricket Frog *A. crepitans*	0	1	2	3	
Green Frog *L. c. melanota*	0	1	2	3	
Bullfrog *L. catesbeiana*	0	1	2	3	
Additional Amphib sp.	0	1	2	3	

Additional Species and Wildlife Observations: No Anurans Calling

Applied Ecological Services, Inc.

Calling Amphibian Survey

Project Location: ΦΦ-0543 BNR LBR AOC **Survey Date:** 4/3/12

Calling Location ID: 212 Bailey Woods **Surveyor(s) Initials:** NG

Time START	8:42 PM	**Time STOP**	8:47 PM	**Photo(s) Taken?**	—

Climatic Variables

Amb Temp (^{0}C) 48°F Sur Temp (^{0}C) ____

Amb RH (%) ____ Sur RH (%) ____

Circle One: **(refer to codes on back)**

Precipitation Code	0	1	2	3	4*	5*
Beaufort Wind Code	0	1	2	3	4*	5*

* - unsuitable to perform survey

Wildlife Observations

Calling Amphibians	Calling Intensity Code (refer to code on back)				# of Individuals
American Toad *B. americanus*	0	1	2	3	
Fowler's Toad *B. fowleri*	0	1	2	3	
Chorus Frog *P. triseriata*	0	1	2	3	
Spring Peeper *P. c. crucifer*	0	1	2	3	
Wood Frog *L. sylvatica*	0	1	2	3	
N. Leopard Frog *L. pipiens*	0	1	2	3	
Pickerel Frog *L. palustris*	0	1	2	3	
Gray Treefrog *H. versicolor*	0	1	2	3	
Cricket Frog *A. crepitans*	0	1	2	3	
Green Frog *L. c. melanota*	0	1	2	3	
Bullfrog *L. catesbeiana*	0	1	2	3	
Additional Amphib sp.	0	1	2	3	

Additional Species and Wildlife Observations: No calling animals

Applied Ecological Services, Inc.

Calling Amphibian Survey

Project Location: 09-0543 BNR LBR AOC **Survey Date:** 4/3/12

Calling Location ID: 23-24 Bailey **Surveyor(s) Initials:** NG

Time START	8:33 PM	Time STOP	8:38 PM	Photo(s) Taken?	—

Climatic Variables

Amb Temp (°C) 49°F Sur Temp (°C) ______

Amb RH (%) ______ Sur RH (%) ______

Circle One: (refer to codes on back)

Precipitation Code	0	1	2	3	4*	5*
Beaufort Wind Code	0	1	2	3	4*	5*

* - unsuitable to perform survey

Wildlife Observations

Calling Amphibians	Calling Intensity Code (refer to code on back)				# of Individuals
American Toad *B. americanus*	0	1	2	3	
Fowler's Toad *B. fowleri*	0	1	2	3	
Chorus Frog *P. triseriata*	0	1	2	3	
Spring Peeper *P. c. crucifer*	0	1	2	3	
Wood Frog *L. sylvatica*	0	1	2	3	
N. Leopard Frog *L. pipiens*	0	1	2	3	
Pickerel Frog *L. palustris*	0	1	2	3	
Gray Treefrog *H. versicolor*	0	1	2	3	
Cricket Frog *A. crepitans*	0	1	2	3	
Green Frog *L. c. melanota*	0	1	2	3	
Bullfrog *L. catesbeiana*	0	1	2	3	
Additional Amphib sp.	0	1	2	3	

Additional Species and Wildlife Observations: No Amphibians Calling

Park @ Top [illegible] (Bailey Ave)

Applied Ecological Services, Inc.

Calling Amphibian Survey

Project Location: 00-0543 BNR LBR AOC **Survey Date:** 4/3/12

Calling Location ID: Seven Bluffs 25928 **Surveyor(s) Initials:** NG

Time START	8:15PM	**Time STOP**	8:20PM	**Photo(s) Taken?**	No

Climatic Variables

Amb Temp (^{0}C) 49°F Sur Temp (^{0}C) ______

Amb RH (%) ______ Sur RH (%) ______

Circle One: **(refer to codes on back)**

Precipitation Code	0	1	2	3	4*	5*
Beaufort Wind Code	0	1	2	3	4*	5*

* - unsuitable to perform survey

Wildlife Observations

Calling Amphibians	Calling Intensity Code (refer to code on back)				# of Individuals
American Toad *B. americanus*	0	1	2	3	
Fowler's Toad *B. fowleri*	0	1	2	3	
Chorus Frog *P. triseriata*	0	1	2	3	
Spring Peeper *P. c. crucifer*	0	1	2	3	
Wood Frog *L. sylvatica*	0	1	2	3	
N. Leopard Frog *L. pipiens*	0	1	2	3	
Pickerel Frog *L. palustris*	0	1	2	3	
Gray Treefrog *H. versicolor*	0	1	2	3	
Cricket Frog *A. crepitans*	0	1	2	3	
Green Frog *L. c. melanota*	0	1	2	3	
Bullfrog *L. catesbeiana*	0	1	2	3	
Additional Amphib sp.	0	1	2	3	

Additional Species and Wildlife Observations: No Anurans calling

RWBL

CAGO

Applied Ecological Services, Inc.

Calling Amphibian Survey

Project Location: 09-0543 BNR LBR AOC **Survey Date:** 4/3/12

Calling Location ID: 29 - Pork Pie **Surveyor(s) Initials:** NG

Time START	9:23PM	Time STOP	9:28PM	Phot(s) Taken?	—

Climatic Variables

Amb Temp (^{0}C) 47°F Sur Temp (^{0}C) ______

Amb RH (%) ______ Sur RH (%) ______

Circle One: (refer to codes on back)

Precipitation Code	0	1	2	3	4*	5*
Beaufort Wind Code	0	1	2	3	4*	5*

* - unsuitable to perform survey

Wildlife Observations

Calling Amphibians	Calling Intensity Code (refer to code on back)				# of Individuals
American Toad *B. americanus*	0	1	2	3	
Fowler's Toad *B. fowleri*	0	1	2	3	
Chorus Frog *P. triseriata*	0	1	2	3	
Spring Peeper *P. c. crucifer*	0	1	2	3	
Wood Frog *L. sylvatica*	0	1	2	3	
N. Leopard Frog *L. pipiens*	0	1	2	3	
Pickerel Frog *L. palustris*	0	1	2	3	
Gray Treefrog *H. versicolor*	0	1	2	3	
Cricket Frog *A. crepitans*	0	1	2	3	
Green Frog *L. c. melanota*	0	1	2	3	
Bullfrog *L. catesbeiana*	0	1	2	3	
Additional Amphib sp.	0	1	2	3	

Additional Species and Wildlife Observations:

Quail = 1-2 individuals, in open field area behind Pork Pie

Calling Amphibian Survey

Project Location: 00-0543 BNR LBR AOC **Survey Date:** 4/8/12

Calling Location ID: 720-722 **Surveyor(s) Initials:** NG

Time START	9:04 PM	**Time STOP**	9:09 PM	**Photo(s) Taken?**	—

Climatic Variables

Amb Temp (^{0}C) 43°F Sur Temp (^{0}C) ______

Amb RH (%) ______ Sur RH (%) ______

Circle One: **(refer to codes on back)**

Precipitation Code	0	1	2	3	4*	5*
Beaufort Wind Code	0	1	2	3	4*	5*

* - unsuitable to perform survey

Wildlife Observations

Calling Amphibians	Calling Intensity Code (refer to code on back)				# of Individuals
American Toad *B. americanus*	0	1	2	3	
Fowler's Toad *B. fowleri*	0	1	2	3	
Chorus Frog *P. triseriata*	0	1	2	3	
Spring Peeper *P. c. crucifer*	0	1	2	3	
Wood Frog *L. sylvatica*	0	1	2	3	
N. Leopard Frog *L. pipiens*	0	1	2	3	
Pickerel Frog *L. palustris*	0	1	2	3	
Gray Treefrog *H. versicolor*	0	1	2	3	
Cricket Frog *A. crepitans*	0	1	2	3	
Green Frog *L. c. melanota*	0	1	2	3	
Bullfrog *L. catesbeiana*	0	1	2	3	
Additional Amphib sp.	0	1	2	3	

Additional Species and Wildlife Observations:

±4 White-tail Deer

CAGO (calling)

CONI - sounded like CONI but stayed in

same spot (3) - 2 ind. [illegible]

KILL

↳ single note like CONI

Applied Ecological Services, Inc.

Calling Amphibian Survey

Project Location: 11-0543 BNR LBR AOC **Survey Date:** 4/27

Calling Location ID: BNR 201 **Surveyor(s) Initials:** MJM

Time START	2059	**Time STOP**	2104	**Phot(s) Taken?**	N

Climatic Variables

Amb Temp (°C) 11.1 Sur Temp (°C) 11.6

Amb RH (%) 65 Sur RH (%) 67

Circle One: **(refer to codes on back)**

Precipitation Code	0	1	2	3	4*	5*
Beaufort Wind Code	0	1	2	3	4*	5*

* - unsuitable to perform survey

Wildlife Observations

Calling Amphibians	Calling Intensity Code (refer to code on back)				# of Individuals
American Toad *B. americanus*	0	1	2	3	~3
Fowler's Toad *B. fowleri*	0	1	2	3	
Chorus Frog *P. triseriata*	0	1	2	3	
Spring Peeper *P. c. crucifer*	0	1	2	3	
Wood Frog *L. sylvatica*	0	1	2	3	
N. Leopard Frog *L. pipiens*	0	1	2	3	
Pickerel Frog *L. palustris*	0	1	2	3	
Gray Treefrog *H. versicolor*	0	1	2	3	
Cricket Frog *A. crepitans*	0	1	2	3	
Green Frog *L. c. melanota*	0	1	2	3	
Bullfrog *L. catesbeiana*	0	1	2	3	
Additional Amphib sp.	0	1	2	3	

Additional Species and Wildlife Observations:

Distant to the South / South East

CAGO, RWBL, AMRO, KILL, SOSP

Applied Ecological Services, Inc.

Calling Amphibian Survey

Project Location: 11-0543 BNR LBR AOC **Survey Date:** 4/27/12

Calling Location ID: BNR 202 **Surveyor(s) Initials:** MJM

Time START	2110	**Time STOP**	2115	**Photo(s) Taken?**	0

Climatic Variables

Amb Temp (°C) 11.1 Sur Temp (°C) 11.2

Amb RH (%) 66 Sur RH (%) 66

Circle One: **(refer to codes on back)**

Precipitation Code	0	1	2	3	4*	5*
Beaufort Wind Code	0	1	2	3	4*	5*

* - unsuitable to perform survey

Wildlife Observations

Calling Amphibians	Calling Intensity Code (refer to code on back)				# of Individuals
American Toad *B. americanus*	0	1	2	3	Same pop as 201?
Fowler's Toad *B. fowleri*	0	1	2	3	
Chorus Frog *P. triseriata*	0	1	2	3	
Spring Peeper *P. c. crucifer*	0	1	2	3	
Wood Frog *L. sylvatica*	0	1	2	3	
N. Leopard Frog *L. pipiens*	0	1	2	3	
Pickerel Frog *L. palustris*	0	1	2	3	
Gray Treefrog *H. versicolor*	0	1	2	3	
Cricket Frog *A. crepitans*	0	1	2	3	
Green Frog *L. c. melanota*	0	1	2	3	
Bullfrog *L. catesbeiana*	0	1	2	3	
Additional Amphib sp.	0	1	2	3	

Additional Species and Wildlife Observations:

to the North

RBGU, AMRO, MODO

Calling Amphibian Survey

Project Location: 11-0543 BNR LBR AOC **Survey Date:** 4/27/12

Calling Location ID: 3PO3 Cont **Surveyor(s) Initials:** [illegible]

Time START	2118	Time STOP	2123	Photo(s) Taken?	N

Climatic Variables

Amb Temp (^{0}C) 11 Sur Temp (^{0}C) 11.2

Amb RH (%) 56 Sur RH (%) 60

Circle One: **(refer to codes on back)**

Precipitation Code	0	1	2	3	4*	5*
Beaufort Wind Code	0	1	2	3	4*	5*

* - unsuitable to perform survey

Wildlife Observations

Calling Amphibians	Calling Intensity Code (refer to code on back)				# of Individuals
American Toad *B. americanus*	0	1	2	3	
Fowler's Toad *B. fowleri*	0	1	2	3	
Chorus Frog *P. triseriata*	0	1	2	3	
Spring Peeper *P. c. crucifer*	0	1	2	3	
Wood Frog *L. sylvatica*	0	1	2	3	
N. Leopard Frog *L. pipiens*	0	1	2	3	1
Pickerel Frog *L. palustris*	0	1	2	3	
Gray Treefrog *H. versicolor*	0	1	2	3	
Cricket Frog *A. crepitans*	0	1	2	3	
Green Frog *L. c. melanota*	0	1	2	3	
Bullfrog *L. catesbeiana*	0	1	2	3	
Additional Amphib sp.	0	1	2	3	

Additional Species and Wildlife Observations:

from opposite bank

GRTE!

Applied Ecological Services, Inc.

Calling Amphibian Survey

Project Location: 11-0543 BNR LBR AOC **Survey Date:** 4/27

Calling Location ID: 204 Ohio St. **Surveyor(s) Initials:** [illegible]

Time START	2129	**Time STOP**	2134	**Phot(s) Taken?**	0

Climatic Variables

Amb Temp (^{0}C) 11 Sur Temp (^{0}C) 11.2

Amb RH (%) 60 Sur RH (%) 63

Circle One: **(refer to codes on back)**

Precipitation Code	0	1	2	3	4*	5*
Beaufort Wind Code	0	1	2	3	4*	5*

* - unsuitable to perform survey

Wildlife Observations

Calling Amphibians	Calling Intensity Code (refer to code on back)				# of Individuals
American Toad *B. americanus*	0	1	2	3	9
~~Fowler's Toad *B. fowleri*~~	~~0~~	~~1~~	~~2~~	~~3~~	in rock pool
Chorus Frog *P. triseriata*	0	1	2	3	
Spring Peeper *P. c. crucifer*	0	1	2	3	
Wood Frog *L. sylvatica*	0	1	2	3	
N. Leopard Frog *L. pipiens*	0	1	2	3	1
Pickerel Frog *L. palustris*	0	1	2	3	
Gray Treefrog *H. versicolor*	0	1	2	3	
Cricket Frog *A. crepitans*	0	1	2	3	
Green Frog *L. c. melanota*	0	1	2	3	
Bullfrog *L. catesbeiana*	0	1	2	3	
Additional Amphib sp.	0	1	2	3	

Additional Species and Wildlife Observations:

East coast - temporarily disturbed

Applied Ecological Services, Inc.

Calling Amphibian Survey

Project Location: 11-0543 BNR LBR AOC

Survey Date: 4/27/12

Calling Location ID: 205 Miron St.

Surveyor(s) Initials: [illegible]

Time START	Time STOP	Photo(s) Taken?
2138	2143	[illegible]

Climatic Variables

Amb Temp (°C) 10.8 Sur Temp (°C) 11

Amb RH (%) 60 Sur RH (%) 60

Circle One: **(refer to codes on back)**

Precipitation Code	0	1	2	3	4*	5*
Beaufort Wind Code	0	1	2	3	4*	5*

* - unsuitable to perform survey

Wildlife Observations

Calling Amphibians	Calling Intensity Code (refer to code on back)				# of Individuals
American Toad *B. americanus*	0	1	2	3	
Fowler's Toad *B. fowleri*	0	1	2	3	
Chorus Frog *P. triseriata*	0	1	2	3	
Spring Peeper *P. c. crucifer*	0	1	2	3	
Wood Frog *L. sylvatica*	0	1	2	3	
N. Leopard Frog *L. pipiens*	0	1	2	3	
Pickerel Frog *L. palustris*	0	1	2	3	
Gray Treefrog *H. versicolor*	0	1	2	3	
Cricket Frog *A. crepitans*	0	1	2	3	
Green Frog *L. c. melanota*	0	1	2	3	
Bullfrog *L. catesbeiana*	0	1	2	3	
Additional Amphib sp.	0	1	2	3	

Additional Species and Wildlife Observations:

Calling Amphibian Survey

Project Location: 11-0543 BNR LBR AOC **Survey Date:** 05

Calling Location ID: 206 Top of Koth **Surveyor(s) Initials:** 4/27/12

Time START	2156	Time STOP	2201	Photo(s) Taken?	

Climatic Variables

Amb Temp (^0C) 11.0 Sur Temp (^0C) 11.2

Amb RH (%) 60 Sur RH (%) 61

Circle One: (refer to codes on back)

Precipitation Code	0	1	2	3	4*	5*
Beaufort Wind Code	0	1	2	3	4*	5*

* - unsuitable to perform survey

Wildlife Observations

Calling Amphibians	Calling Intensity Code (refer to code on back)				# of Individuals
American Toad *B. americanus*	0	1	2	3	
Fowler's Toad *B. fowleri*	0	1	2	3	
Chorus Frog *P. triseriata*	0	1	2	3	
Spring Peeper *P. c. crucifer*	0	1	2	3	
Wood Frog *L. sylvatica*	0	1	2	3	
N. Leopard Frog *L. pipiens*	0	1	2	3	
Pickerel Frog *L. palustris*	0	1	2	3	
Gray Treefrog *H. versicolor*	0	1	2	3	
Cricket Frog *A. crepitans*	0	1	2	3	
Green Frog *L. c. melanota*	0	1	2	3	
Bullfrog *L. catesbeiana*	0	1	2	3	
Additional Amphib sp.	0	1	2	3	

Additional Species and Wildlife Observations:

QUIET

Calling Amphibian Survey

Project Location: 11-0543 BNR LBR AOC **Survey Date:** 4/27/12

Calling Location ID: 208 Kath Residential **Surveyor(s) Initials:** [illegible]

Time START	2104	Time STOP	2109	Photo(s) Taken?	[illegible]

Climatic Variables

Amb Temp (^{0}C) 10.8 Sur Temp (^{0}C) 11.0

Amb RH (%) 60 Sur RH (%) 66

Circle One: (refer to codes on back)

Precipitation Code	0	1	2	3	4*	5*
Beaufort Wind Code	0	1	2	3	4*	5*

* - unsuitable to perform survey

Wildlife Observations

Calling Amphibians	Calling Intensity Code (refer to code on back)				# of Individuals
American Toad *B. americanus*	0	1	2	3	15?
Fowler's Toad *B. fowleri*	0	1	~~2~~	3	
Chorus Frog *P. triseriata*	0	1	2	3	
Spring Peeper *P. c. crucifer*	0	1	2	3	
Wood Frog *L. sylvatica*	0	1	2	3	
N. Leopard Frog *L. pipiens*	0	1	2	3	
Pickerel Frog *L. palustris*	0	1	2	3	
Gray Treefrog *H. versicolor*	0	1	2	3	
Cricket Frog *A. crepitans*	0	1	2	3	
Green Frog *L. c. melanota*	0	1	2	3	
Bullfrog *L. catesbeiana*	0	1	2	3	
Additional Amphib sp.	0	1	2	3	

Additional Species and Wildlife Observations:

from meadow to north

Applied Ecological Services, Inc.

Calling Amphibian Survey

Project Location: 11-0543 BNR LBR AOC **Survey Date:** 4/27/12

Calling Location ID: 210 Smith St **Surveyor(s) Initials:** [illegible]

Time START	Time STOP	Photo(s) Taken?
2223	2228	✓

Climatic Variables

Amb Temp (^{0}C) 10.7 Sur Temp (^{0}C) 10.8

Amb RH (%) 60 Sur RH (%) 67

Circle One: (refer to codes on back)

Precipitation Code	0	1	2	3	4*	5*
Beaufort Wind Code	0	1	2	3	4*	5*

* - unsuitable to perform survey

Wildlife Observations

Calling Amphibians	Calling Intensity Code (refer to code on back)				# of Individuals
American Toad *B. americanus*	0	1	2	3	
Fowler's Toad *B. fowleri*	0	1	2	3	
Chorus Frog *P. triseriata*	0	1	2	3	
Spring Peeper *P. c. crucifer*	0	1	2	3	
Wood Frog *L. sylvatica*	0	1	2	3	
N. Leopard Frog *L. pipiens*	0	1	2	3	small chorus
Pickerel Frog *L. palustris*	0	1	2	3	
Gray Treefrog *H. versicolor*	0	1	2	3	
Cricket Frog *A. crepitans*	0	1	2	3	
Green Frog *L. c. melanota*	0	1	2	3	few [illegible]
Bullfrog *L. catesbeiana*	0	1	2	3	by [illegible]
Additional Amphib sp.	0	1	2	3	

Additional Species and Wildlife Observations:

Good Lithobatid location / habitat

marsh finch

Applied Ecological Services, Inc.

Calling Amphibian Survey

Project Location: 11-0543 BNR LBR AOC **Survey Date:** 4/27/12

Calling Location ID: 212 Bailey Woods **Surveyor(s) Initials:** VW

Time START	2241	**Time STOP**	2245	**Photo(s) Taken?**	

Climatic Variables

Amb Temp (^{0}C) 10.8 Sur Temp (^{0}C) 10.9

Amb RH (%) 60 Sur RH (%) 62

Circle One: **(refer to codes on back)**

Precipitation Code	0	1	2	3	4*	5*
Beaufort Wind Code	0	1	2	3	4*	5*

* - unsuitable to perform survey

Wildlife Observations

Calling Amphibians	Calling Intensity Code (refer to code on back)				# of Individuals
American Toad *B. americanus*	0	1	2	3	
Fowler's Toad *B. fowleri*	0	1	2	3	
Chorus Frog *P. triseriata*	0	1	2	3	
Spring Peeper *P. c. crucifer*	0	1	2	3	
Wood Frog *L. sylvatica*	0	1	2	3	
N. Leopard Frog *L. pipiens*	0	1	2	3	
Pickerel Frog *L. palustris*	0	1	2	3	
Gray Treefrog *H. versicolor*	0	1	2	3	
Cricket Frog *A. crepitans*	0	1	2	3	
Green Frog *L. c. melanota*	0	1	2	3	
Bullfrog *L. catesbeiana*	0	1	2	3	
Additional Amphib sp.	0	1	2	3	

Additional Species and Wildlife Observations:

Small depression in woods (not a WL?)

* distant AMTO's heard from across river also

Applied Ecological Services, Inc.

Calling Amphibian Survey

Project Location: 11-0543 BNR LBR AOC **Survey Date:** 4/27/12

Calling Location ID: 2B Bailey Pomeroy **Surveyor(s) Initials:** [illegible]

Time START	2253	Time STOP	2258	Photo(s) Taken?	N

Climatic Variables

Amb Temp (^{0}C) 5 pm / 63 pm Sur Temp (^{0}C) ______

Amb RH (%) ______ Sur RH (%) ______

Circle One: (refer to codes on back)

Precipitation Code	0	1	2	3	4*	5*
Beaufort Wind Code	0	1	2	3	4*	5*

* - unsuitable to perform survey

Wildlife Observations

Calling Amphibians	Calling Intensity Code (refer to code on back)				# of Individuals
American Toad *B. americanus*	0	1	2	3	from across river
Fowler's Toad *B. fowleri*	0	1	2	3	
Chorus Frog *P. triseriata*	0	1	2	3	
Spring Peeper *P. c. crucifer*	0	1	2	3	intermittent
Wood Frog *L. sylvatica*	0	1	2	3	
N. Leopard Frog *L. pipiens*	0	1	2	3	
Pickerel Frog *L. palustris*	0	1	2	3	
Gray Treefrog *H. versicolor*	0	1	2	3	
Cricket Frog *A. crepitans*	0	1	2	3	
Green Frog *L. c. melanota*	0	1	2	3	
Bullfrog *L. catesbeiana*	0	1	2	3	
Additional Amphib sp.	0	1	2	3	

Additional Species and Wildlife Observations:

from areas not on prem.

NSPE - SW

AMTO - NW → opp sides of river (upriver)

Calling Amphibian Survey

Project Location: 11-0543 BNR LBR AOC **Survey Date:** 4/27

Calling Location ID: 119 **Surveyor(s) Initials:** [illegible]

Time START	2316	**Time STOP**	2321	**Photo(s) Taken?**	N

Climatic Variables

Amb Temp (°C) 50 [illegible] Sur Temp (°C) ______

Amb RH (%) 65 pm Sur RH (%) ______

Circle One: (refer to codes on back)

Precipitation Code	0	1	2	3	4*	5*
Beaufort Wind Code	0	1	2	3	4*	5*

* - unsuitable to perform survey

Wildlife Observations

Calling Amphibians	Calling Intensity Code (refer to code on back)				# of Individuals
American Toad *B. americanus*	0	1	2	3	sparse calls
Fowler's Toad *B. fowleri*	0	1	2	3	
Chorus Frog *P. triseriata*	0	1	2	3	
Spring Peeper *P. c. crucifer*	0	1	2	3	from down river
Wood Frog *L. sylvatica*	0	1	2	3	
N. Leopard Frog *L. pipiens*	0	1	2	3	
Pickerel Frog *L. palustris*	0	1	2	3	
Gray Treefrog *H. versicolor*	0	1	2	3	
Cricket Frog *A. crepitans*	0	1	2	3	
Green Frog *L. c. melanota*	0	1	2	3	
Bullfrog *L. catesbeiana*	0	1	2	3	
Additional Amphib sp.	0	1	2	3	

Additional Species and Wildlife Observations:

CAGO

Applied Ecological Services, Inc.

Calling Amphibian Survey

Project Location: 11-0543 BNR LBR AOC **Survey Date:** 4/27/12

Calling Location ID: 1-10 **Surveyor(s) Initials:** MJ

Time START	2302	**Time STOP**	2307	**Photo(s) Taken?**	0

Climatic Variables

Amb Temp (°C) 10.7 Sur Temp (°C) 10.7

Amb RH (%) 58 Sur RH (%) 59

Circle One: **(refer to codes on back)**

Precipitation Code	0	1	2	3	4*	5*
Beaufort Wind Code	0	1	2	3	4*	5*

* - unsuitable to perform survey

Wildlife Observations

Calling Amphibians		Calling Intensity Code (refer to code on back)				# of Individuals
* American Toad	*B. americanus*	0	1	2	3	Many!
Fowler's Toad	*B. fowleri*	0	1	2	3	
Chorus Frog	*P. triseriata*	0	1	2	3	
Spring Peeper	*P. c. crucifer*	0	1	2	3	
Wood Frog	*L. sylvatica*	0	1	2	3	
N. Leopard Frog	*L. pipiens*	0	1	2	3	
Pickerel Frog	*L. palustris*	0	1	2	3	
Gray Treefrog	*H. versicolor*	0	1	2	3	
Cricket Frog	*A. crepitans*	0	1	2	3	
Green Frog	*L. c. melanota*	0	1	2	3	
Bullfrog	*L. catesbeiana*	0	1	2	3	
Additional Amphib sp.		0	1	2	3	

Additional Species and Wildlife Observations:

observed many about, males

on territories in phrag pool

near cone

SORA chip

MOLL F/O

migrant passerine chips? - white [illegible]

Applied Ecological Services, Inc.

Calling Amphibian Survey

Project Location: 11-0543 BNR LBR AOC **Survey Date:** 4/27/12

Calling Location ID: 2/6 (Seneca Bluffs) **Surveyor(s) Initials:** MJ

Time START	2325	Time STOP	2330	Photo(s) Taken?	N

Climatic Variables

Amb Temp (°C) 10.7 Sur Temp (°C) 10.8

Amb RH (%) 60 Sur RH (%) 60

Circle One: (refer to codes on back)

Precipitation Code	0	1	2	3	4*	5*
Beaufort Wind Code	0	1	2	3	4*	5*

* - unsuitable to perform survey

Wildlife Observations

Calling Amphibians	Calling Intensity Code (refer to code on back)				# of Individuals
American Toad *B. americanus*	0	1	2	3	in depression field
~~Fowler's Toad *B. fowleri*~~	~~0~~	~~1~~	~~2~~	~~3~~	
Chorus Frog *P. triseriata*	0	1	2	3	
Spring Peeper *P. c. crucifer*	0	1	2	3	in willow
Wood Frog *L. sylvatica*	0	1	2	3	
N. Leopard Frog *L. pipiens*	0	1	2	3	
Pickerel Frog *L. palustris*	0	1	2	3	
Gray Treefrog *H. versicolor*	0	1	2	3	
Cricket Frog *A. crepitans*	0	1	2	3	
Green Frog *L. c. melanota*	0	1	2	3	in depression
Bullfrog *L. catesbeiana*	0	1	2	3	
Additional Amphib sp.	0	1	2	3	

Additional Species and Wildlife Observations:

AMRO, SOSP, chip? MOWL

Applied Ecological Services, Inc.

Calling Amphibian Survey

Project Location: 09-0543 BNR LBR AOC **Survey Date:** 5/3/12

Calling Location ID: 102/101/105 **Surveyor(s) Initials:** NG

Time START	—	Time STOP	—	Photo(s) Taken? —

Climatic Variables

Amb Temp (^{0}C) — Sur Temp (^{0}C) _____

Amb RH (%) — Sur RH (%) _____

Circle One: **(refer to codes on back)**

Precipitation Code	0	1	2	3	4*	5*
Beaufort Wind Code	0	1	2	3	4*	5*

* - unsuitable to perform survey

Wildlife Observations

Calling Amphibians	Calling Intensity Code (refer to code on back)				# of Individuals
American Toad *B. americanus*	0	1	2	3	
Fowler's Toad *B. fowleri*	0	1	2	3	
Chorus Frog *P. triseriata*	0	1	2	3	
Spring Peeper *P. c. crucifer*	0	1	2	3	
Wood Frog *L. sylvatica*	0	1	2	3	
N. Leopard Frog *L. pipiens*	0	1	2	3	
Pickerel Frog *L. palustris*	0	1	2	3	
Gray Treefrog *H. versicolor*	0	1	2	3	
Cricket Frog *A. crepitans*	0	1	2	3	
Green Frog *L. c. melanota*	0	1	2	3	
Bullfrog *L. catesbeiana*	0	1	2	3	
Additional Amphib sp.	0	1	2	3	

Additional Species and Wildlife Observations:

** Another T storm moved in, thundering/downpour. Temp ↓, did NOT survey for 102/101/105 due to weather

Applied Ecological Services, Inc.

Calling Amphibian Survey

Project Location: 09-0543 BNR LBR AOC **Survey Date:** 5/3/12

Calling Location ID: [illegible] **Surveyor(s) Initials:** [illegible]

Time START	10:50 PM	Time STOP	10:55 PM	Photo(s) Taken?	–

Climatic Variables

Amb Temp (^{0}C) 64.9°F Sur Temp (^{0}C) ______

Amb RH (%) 77.6 Sur RH (%) ______

Circle One: (refer to codes on back)

Precipitation Code	0	1	2	3	4*	5*
Beaufort Wind Code	0	1	2 /	3	4*	5*

* - unsuitable to perform survey

Wildlife Observations

Calling Amphibians	Calling Intensity Code (refer to code on back)				# of Individuals
American Toad *B. americanus*	0	1	2	3	
Fowler's Toad *B. fowleri*	0	1	2	3	
Chorus Frog *P. triseriata*	0	1	2	3	
Spring Peeper *P. c. crucifer*	0	1	2	3	
Wood Frog *L. sylvatica*	0	1	2	3	
N. Leopard Frog *L. pipiens*	0	1	2	3	
Pickerel Frog *L. palustris*	0	1	2	3	
Gray Treefrog *H. versicolor*	0	1	2	3	
Cricket Frog *A. crepitans*	0	1	2	3	
Green Frog *L. c. melanota*	0	1	2	3	
Bullfrog *L. catesbeiana*	0	1	2	3	
Additional Amphib sp.	0	1	2	3	

Additional Species and Wildlife Observations:

*More thunder/lighting, storm roll [illegible] [illegible]. Frogs have shut down.

Calling Amphibian Survey

Project Location: 09-0543 BNR LBR AOC **Survey Date:** 5/3/12

Calling Location ID: 104 - Ohio St **Surveyor(s) Initials:** NG

Time START	10:37 PM	Time STOP	10:42 PM	Photo(s) Taken?

Climatic Variables

Amb Temp (°C) 67.5 °F   Sur Temp (°C) ______

Amb RH (%) 71.9   Sur RH (%) ______

Circle One: (refer to codes on back)

Precipitation Code	0	1	2	3	4*	5*
Beaufort Wind Code	0	1	2	3	4*	5*

* - unsuitable to perform survey

Wildlife Observations

Calling Amphibians	Calling Intensity Code (refer to code on back)				# of Individuals
American Toad *B. americanus*	0	1	2	3	
Fowler's Toad *B. fowleri*	0	1	2	3	
Chorus Frog *P. triseriata*	0	1	2	3	
Spring Peeper *P. c. crucifer*	0	1	2	3	
Wood Frog *L. sylvatica*	0	1	2	3	
N. Leopard Frog *L. pipiens*	0	1	2	3	
Pickerel Frog *L. palustris*	0	1	2	3	
Gray Treefrog *H. versicolor*	0	1	2	3	
Cricket Frog *A. crepitans*	0	1	2	3	
Green Frog *L. c. melanota*	0	1	2	3	
Bullfrog *L. catesbeiana*	0	1	2	3	
Additional Amphib sp.	0	1	2	3	

Additional Species and Wildlife Observations:

* Lighting but no more rain/thunder

\#KILL

Calling Amphibian Survey

Project Location: 09-0543 BNR LBR AOC

Survey Date: 5/3/12

Calling Location ID: 106 - South St

Surveyor(s) Initials: NG

Time START	—	Time STOP	—	Photo(s) Taken?	—

Climatic Variables

Amb Temp (°C) —　　Sur Temp (°C) ____

Amb RH (%) —　　Sur RH (%) ____

Circle One: (refer to codes on back)

Precipitation Code	0	1	2	3	4*	5*
Beaufort Wind Code	0	1	2	3	4*	5*

* - unsuitable to perform survey

Wildlife Observations

Calling Amphibians	Calling Intensity Code (refer to code on back)				# of Individuals
American Toad *B. americanus*	0	1	2	3	
Fowler's Toad *B. fowleri*	0	1	2	3	
Chorus Frog *P. triseriata*	0	1	2	3	
Spring Peeper *P. c. crucifer*	0	1	2	3	
Wood Frog *L. sylvatica*	0	1	2	3	
N. Leopard Frog *L. pipiens*	0	1	2	3	
Pickerel Frog *L. palustris*	0	1	2	3	
Gray Treefrog *H. versicolor*	0	1	2	3	
Cricket Frog *A. crepitans*	0	1	2	3	
Green Frog *L. c. melanota*	0	1	2	3	
Bullfrog *L. catesbeiana*	0	1	2	3	
Additional Amphib sp.	0	1	2	3	

Additional Species and Wildlife Observations:

* Could NOT survey, fire trucks + police all over street where I needed to be.

Project Location: 09-0543 BNR LBR AOC **Survey Date:** 5/3/12

Calling Location ID: 107-109 Kathr... St **Surveyor(s) Initials:** NG

Time START	10:25	Time STOP	10:30	Photo(s) Taken?	—

Climatic Variables

Amb Temp (°C) 69.6°F Sur Temp (°C) ______

Amb RH (%) — see Sur RH (%) ______

Circle One: (refer to codes on back)

Precipitation Code	0	1	2	3	4*	5*
Beaufort Wind Code	0	1	2	3	4*	5*

* - unsuitable to perform survey

Wildlife Observations

Calling Amphibians	Calling Intensity Code (refer to code on back)				# of Individuals
American Toad *B. americanus*	0	1	2	3	2-3
Fowler's Toad *B. fowleri*	0	1	2	3	
Chorus Frog *P. triseriata*	0	1	2	3	
Spring Peeper *P. c. crucifer*	0	1	2	3	
Wood Frog *L. sylvatica*	0	1	2	3	
N. Leopard Frog *L. pipiens*	0	1	2	3	
Pickerel Frog *L. palustris*	0	1	2	3	
Gray Treefrog *H. versicolor*	0	1	2	3	
Cricket Frog *A. crepitans*	0	1	2	3	
Green Frog *L. c. melanota*	0	1	2	3	
Bullfrog *L. catesbeiana*	0	1	2	3	
Additional Amphib sp.	0	1	2	3	

Additional Species and Wildlife Observations:

* Thunderstorm moved in during survey. Thunder/lighting, downpour!

* Toads heard before storm were between pts 108 + 109.

Calling Amphibian Survey

Project Location: 09-0543 BNR LBR AOC

Survey Date: 5/3/12

Calling Location ID: 110 - Smith St

Surveyor(s) Initials: NG

Time START	10:41 PM	Time STOP	10:5? PM	Phot(s) Taken?	–

Climatic Variables

Amb Temp (^{0}C) 70.6 °F

Sur Temp (^{0}C) ______

Amb RH (%) 70.1

Sur RH (%) ______

Circle One: (refer to codes on back)

Precipitation Code	0	1	2	3	4*	5*
Beaufort Wind Code	0	1	2	3	4*	5*

* - unsuitable to perform survey

Wildlife Observations

Calling Amphibians	Calling Intensity Code (refer to code on back)				# of Individuals
American Toad *B. americanus*	0	1	2	3	4-5
Fowler's Toad *B. fowleri*	0	1	2	3	
Chorus Frog *P. triseriata*	0	1	2	3	
Spring Peeper *P. c. crucifer*	0	1	2	3	
Wood Frog *L. sylvatica*	0	1	2	3	
N. Leopard Frog *L. pipiens*	0	1	2	3	
Pickerel Frog *L. palustris*	0	1	2	3	
Gray Treefrog *H. versicolor*	0	1	2	3	
Cricket Frog *A. crepitans*	0	1	2	3	
Green Frog *L. c. melanota*	0	1	2	3	
Bullfrog *L. catesbeiana*	0	1	2	3	
Additional Amphib sp.	0	1	2	3	

Additional Species and Wildlife Observations:

* Calling toads near wetland area.

Calling Amphibian Survey

Project Location: 09-0543 BNR LBR AOC **Survey Date:** 5/3/12

Calling Location ID: Pt 111 - New Abbey St **Surveyor(s) Initials:** NA

Time START	9:30 PM	Time STOP	9:35 PM	Photo(s) Taken?	—

Climatic Variables

Amb Temp (^0C) 76.9°F Sur Temp (^0C) ______

Amb RH (%) 64.8 Sur RH (%) ______

Circle One: (refer to codes on back)

Precipitation Code	0	1	2	3	4*	5*
Beaufort Wind Code	0	1	2	3	4*	5*

* - unsuitable to perform survey

Wildlife Observations

Calling Amphibians	Calling Intensity Code (refer to code on back)				# of Individuals
American Toad *B. americanus*	0	1	2	3	3-5
Fowler's Toad *B. fowleri*	0	1	2	3	
Chorus Frog *P. triseriata*	0	1	2	3	
Spring Peeper *P. c. crucifer*	0	1	2	3	
Wood Frog *L. sylvatica*	0	1	2	3	
N. Leopard Frog *L. pipiens*	0	1	2	3	
Pickerel Frog *L. palustris*	0	1	2	3	
Gray Treefrog *H. versicolor*	0	1	2	3	
Cricket Frog *A. crepitans*	0	1	2	3	
Green Frog *L. c. melanota*	0	1	2	3	
Bullfrog *L. catesbeiana*	0	1	2	3	
Additional Amphib sp.	0	1	2	3	

Additional Species and Wildlife Observations:

CONI

- Majority of toads seemed to be in wooded area (inside fence), (~2 ind on Abbey St side of fence)

Applied Ecological Services, Inc.

Calling Amphibian Survey

Project Location: 09-0543 BNR LBR AOC **Survey Date:** 5/3/12

Calling Location ID: Bailey Woods - 112 **Surveyor(s) Initials:** NG

Time START	Time STOP	Photo(s) Taken?
9:20 PM	9:25 PM	—

Climatic Variables

Amb Temp (°C) 75.1°F Sur Temp (°C) ______

Amb RH (%) 64.2 Sur RH (%) ______

Circle One: (refer to codes on back)

Precipitation Code	0	1	2	3	4*	5*
Beaufort Wind Code	0	1	2	3	4*	5*

* - unsuitable to perform survey

Wildlife Observations

Calling Amphibians	Calling Intensity Code (refer to code on back)				# of Individuals
American Toad *B. americanus*	0	1	2	3	4
Fowler's Toad *B. fowleri*	0	1	2	3	
Chorus Frog *P. triseriata*	0	1	2	3	
Spring Peeper *P. c. crucifer*	0	1	2	3	
Wood Frog *L. sylvatica*	0	1	2	3	
N. Leopard Frog *L. pipiens*	0	1	2	3	
Pickerel Frog *L. palustris*	0	1	2	3	
Gray Treefrog *H. versicolor*	0	1	2	3	
Cricket Frog *A. crepitans*	0	1	2	3	
Green Frog *L. c. melanota*	0	1	2	3	
Bullfrog *L. catesbeiana*	0	1	2	3	
Additional Amphib sp.	0	1	2	3	

Additional Species and Wildlife Observations:

* Toads were on opposite side of river

Calling Amphibian Survey

Project Location: 09-0543 BNR LBR AOC

Survey Date: 5/3/12

Calling Location ID: 113 - [illegible] +114

Surveyor(s) Initials: NG

Time START	9:11 PM	Time STOP	9:16 PM	Photo(s) Taken?	—

Climatic Variables

Amb Temp (^0C) 76.4°F

Sur Temp (^0C) ______

Amb RH (%) 64.5

Sur RH (%) ______

Circle One: **(refer to codes on back)**

Precipitation Code	0	1	2	3	4*	5*
Beaufort Wind Code	0	1	2	3	4*	5*

* - unsuitable to perform survey

Wildlife Observations

Calling Amphibians	Calling Intensity Code (refer to code on back)				# of Individuals
American Toad *B. americanus*	0	1	2	3	
Fowler's Toad *B. fowleri*	0	1	2	3	
Chorus Frog *P. triseriata*	0	1	2	3	
Spring Peeper *P. c. crucifer*	0	1	2	3	
Wood Frog *L. sylvatica*	0	1	2	3	
N. Leopard Frog *L. pipiens*	0	1	2	3	
Pickerel Frog *L. palustris*	0	1	2	3	
Gray Treefrog *H. versicolor*	0	1	2	3	
Cricket Frog *A. crepitans*	0	1	2	3	
Green Frog *L. c. melanota*	0	1	2	3	
Bullfrog *L. catesbeiana*	0	1	2	3	
Additional Amphib sp.	0	1	2	3	

Additional Species and Wildlife Observations:

Lots of road noise. [illegible] at 114 (Bailey Ave Bridge) on way to and from pt 113; no calling [illegible] again road noise.

Applied Ecological Services, Inc.

Calling Amphibian Survey

Project Location: ɸɸ-0543 BNR LBR AOC **Survey Date:** 5/3/12

Calling Location ID: Seneca Bluffs 116-118 **Surveyor(s) Initials:** NG

Time START	8:55PM	Time STOP	9:00PM	Photo(s) Taken?	—

Climatic Variables

Amb Temp (°C) 76.2°F Sur Temp (°C) ____

Amb RH (%) 64.5 Sur RH (%) ____

Circle One: (refer to codes on back)

Precipitation Code	0	1	2	3	4*	5*
Beaufort Wind Code	0	1	2	3	4*	5*

* - unsuitable to perform survey

Wildlife Observations

Calling Amphibians		Calling Intensity Code (refer to code on back)				# of Individuals
American Toad	*B. americanus*	0	1	2	3	3-4
Fowler's Toad	*B. fowleri*	0	1	2	3	
Chorus Frog	*P. triseriata*	0	1	2	3	
Spring Peeper	*P. c. crucifer*	0	1	2	3	
Wood Frog	*L. sylvatica*	0	1	2	3	
N. Leopard Frog	*L. pipiens*	0	1	2	3	
Pickerel Frog	*L. palustris*	0	1	2	3	
Gray Treefrog	*H. versicolor*	0	1	2	3	
Cricket Frog	*A. crepitans*	0	1	2	3	
Green Frog	*L. c. melanata*	0	1	2	3	
Bullfrog	*L. catesbeiana*	0	1	2	3	
Additional Amphib sp.		0	1	2	3	

Additional Species and Wildlife Observations:

Stood in Center of pts 116-118. After 5 min period, I quickly [illegible]

[illegible]

Applied Ecological Services, Inc.

Calling Amphibian Survey

Project Location: Φφ-0543 BNR LBR AOC **Survey Date:** 5/3/12

Calling Location ID: [illegible] - 115 **Surveyor(s) Initials:** NG

Time START	9:04 pm	Time STOP	9:09 pm	Photo(s) Taken?	—

Climatic Variables

Amb Temp (^{0}C) 76.3°F Sur Temp (^{0}C) ______

Amb RH (%) 64.6 Sur RH (%) ______

Circle One: **(refer to codes on back)**

Precipitation Code	**0**	1	2	3	4*	5*
Beaufort Wind Code	0	1	**2**	3	4*	5*

* - unsuitable to perform survey

Wildlife Observations

Calling Amphibians		Calling Intensity Code (refer to code on back)				# of Individuals
American Toad	*B. americanus*	0	**1**	2	3	1-2
Fowler's Toad	*B. fowleri*	**0**	1	2	3	
Chorus Frog	*P. triseriata*	**0**	1	2	3	
Spring Peeper	*P. c. crucifer*	**0**	1	2	3	
Wood Frog	*L. sylvatica*	**0**	1	2	3	
N. Leopard Frog	*L. pipiens*	**0**	1	2	3	
Pickerel Frog	*L. palustris*	**0**	1	2	3	
Gray Treefrog	*H. versicolor*	**0**	1	2	3	
Cricket Frog	*A. crepitans*	**0**	1	2	3	
Green Frog	*L. c. melanota*	**0**	1	2	3	
Bullfrog	*L. catesbeiana*	**0**	1	2	3	
Additional Amphib sp.		**0**	1	2	3	

Additional Species and Wildlife Observations:

Applied Ecological Services, Inc.

Calling Amphibian Survey

Project Location: 09-0543 BNR LBR AOC

Survey Date: 5/3/12

Calling Location ID: 119 - Park

Surveyor(s) Initials: NG

Time START	10:00 PM	Time STOP	10:05 PM	Photo(s) Taken?	—

Climatic Variables

Amb Temp (^{0}C) 71.2°F   Sur Temp (^{0}C) ______

Amb RH (%) 69.5   Sur RH (%) ______

Circle One: (refer to codes on back)

Precipitation Code	0	1	2	3	4*	5*
Beaufort Wind Code	0	1	2	3	4*	5*

* - unsuitable to perform survey

Wildlife Observations

Calling Amphibians	Calling Intensity Code (refer to code on back)				# of Individuals
American Toad *B. americanus*	0	1	2	3	2
Fowler's Toad *B. fowleri*	0	1	2	3	
Chorus Frog *P. triseriata*	0	1	2	3	
Spring Peeper *P. c. crucifer*	0	1	2	3	
Wood Frog *L. sylvatica*	0	1	2	3	
N. Leopard Frog *L. pipiens*	0	1	2	3	
Pickerel Frog *L. palustris*	0	1	2	3	
Gray Treefrog *H. versicolor*	0	1	2	3	
Cricket Frog *A. crepitans*	0	1	2	3	
Green Frog *L. c. melanota*	0	1	2	3	
Bullfrog *L. catesbeiana*	0	1	2	3	
Additional Amphib sp.	0	1	2	3	

Additional Species and Wildlife Observations:

Calling Amphibian Survey

Project Location: 09-0543 BNR LBR AOC **Survey Date:** 5/3/12

Calling Location ID: Riverbend - PTS 120-122 **Surveyor(s) Initials:** NG

Time START	9:45 PM	Time STOP	9:[illegible] PM	Photo(s) Taken?	-

Climatic Variables

Amb Temp (^0C) 71.7°F Sur Temp (^0C) ______

Amb RH (%) 69.6 Sur RH (%) ______

Circle One: (refer to codes on back)

Precipitation Code	0	1	2	3	4*	5*
Beaufort Wind Code	0	1	2	3	4*	5*

* - unsuitable to perform survey

Wildlife Observations

Calling Amphibians	Calling Intensity Code (refer to code on back)				# of Individuals
American Toad *B. americanus*	0	1	2	3	
Fowler's Toad *B. fowleri*	0	1	2	3	
Chorus Frog *P. triseriata*	0	1	2	3	
Spring Peeper *P. c. crucifer*	0	1	2	3	
Wood Frog *L. sylvatica*	0	1	2	3	
N. Leopard Frog *L. pipiens*	0	1	2	3	
Pickerel Frog *L. palustris*	0	1	2	3	
Gray Treefrog *H. versicolor*	0	1	2	3	
Cricket Frog *A. crepitans*	0	1	2	3	
Green Frog *L. c. melanota*	0	1	2	3	
Bullfrog *L. catesbeiana*	0	1	2	3	
Additional Amphib sp.	0	1	2	3	

Additional Species and Wildlife Observations:

* Stood in center of all 3 pts, can hear entire area.

- CONI (~2)
- KILL
- Coyote
  - howling

Majority of toads near Pt 122 (Riverbend), numerous toads, could not distinguish ind.

* Strong wind gusts [illegible] during these pts.

Applied Ecological Services, Inc.

BUF 402

Small Mammal Trapping

Date 8/1 @ 10⁵⁰ am

Location Pt 102 [illegible]

Trap Day 1st check

Temp 73°F

Weather [illegible]

Buffalo River

Time Start 7/31 @ [illegible]

Time End

Species	Sex	Photo (Y/N)	Notes
			* nothing, one trap was missing
			[illegible]

BUF 402

Small Mammal Trapping | **Buffalo River**

Date	8/2 @ [illegible]	Time Start	7/31 @ [illegible]
Location	[illegible]	Time End	8/2 @ [illegible]
Trap Day	2nd [illegible]		
Temp	71°F		
Weather	[illegible], SSW 12 mph		

Species	Sex	Photo (Y/N)	Notes
			*NOTHING

BUF 409

Small Mammal Trapping

Buffalo River

Date	8/1 @ 10^40 am	Time Start	7/31 @ 12^45 PM
Location	Katherine St	Time End	
Trap Day	1st check		
Temp	73°F		
Weather	Partly cloudy, slight breeze		

Species	Sex	Photo (Y/N)	Notes
			* 3 of 4 traps were fired
			w/ bait [illegible] previous [illegible]
			- shoot out as many as
			possible.

BUF409

Small Mammal Trapping

Buffalo River

Date	8/2 @ 8⁴⁵ am	Time Start	7/31 @ 12⁴⁵ pm
Location	[illegible]	Time End	8/2 @ 8⁴⁵ am
Trap Day	[illegible]		
Temp	71°F		
Weather	Partly cloudy, 12 mph SSW		

Species	Sex	Photo (Y/N)	Notes
			*Nothing

BUF412

Small Mammal Trapping | **Buffalo River**

Date	8/1 @ 9²⁰ am	Time Start	7/31 @ 11²⁰ am
Location	Bailey Woods	Time End	
Trap Day	1st check		
Temp	[illegible] °F		
Weather	Partly Cloudy		

Species	Sex	Photo (Y/N)	Notes
White footed mouse	[illegible]	Y	*got away before I could check sex.
			[illegible]
			[illegible] spring
			but [illegible] trap.
			*7 MALL [illegible]

BUF412

Small Mammal Trapping		**Buffalo River**	
Date	8/2 @ 9^{00} am	Time Start	7/31 @ 11^{20} am
Location	Bates Woods	Time End	8/2 @ 9^{00} am
Trap Day	2nd check		
Temp	73°F		
Weather	Hazy, slight breeze		

Species	Sex	Photo (Y/N)	Notes
White footed mouse	n/a	Y	* same trap as previous day

BUF416

Small Mammal Trapping

Buffalo River

Date 8/1 @ 8[00] am	Time Start 7/31 @ 10[00] am
Location Seneca Bluffs	Time End
Trap Day 1st check	
Temp 70° F	
Weather Partly cloudy	

Species	Sex	Photo (Y/N)	Notes
[illegible]	[illegible]	[illegible]	[illegible]
			*another [illegible]
			it [illegible]
			[illegible]

BUF 416

Small Mammal Trapping | **Buffalo River**

Date	[illegible] @ 10[illegible]	Time Start	7/3[illegible] @ 10[illegible]
Location	[illegible]	Time End	[illegible] @ [illegible]
Trap Day	2 [illegible]		
Temp	[illegible]		
Weather	Hazy, SSW 13 mph		

Species	Sex	Photo (Y/N)	Notes
Short[illegible]			* caught [illegible]
			[illegible] dead [illegible]
			[illegible]
			Blood on outside of [illegible]
			* [illegible]
			[illegible]
			[illegible]
			↳ Blood [illegible]
			[illegible]
			[illegible]
			[illegible]
			[illegible]
meadow vole	UNK	Y	
			* Caspian Tern feeding along
			river
			+ 2 [illegible]
			[illegible]

BUF 419

Small Mammal Trapping

Date 8/1 @ 10[illegible] am

Location Pork Pie

Trap Day 1st check

Temp 73°F

Weather [illegible] cloudy, [illegible] breeze

Buffalo River

Time Start 7/31 @ 12:00 PM

Time End

↗ and 2nd [illegible]

Species	Sex	Photo (Y/N)	Notes
			* 1st trap: [illegible] but
			[illegible]
			- I set [illegible]
			[illegible]

BUF419

Small Mammal Trapping | **Buffalo River**

Date	8/2 @ 9:00 am	Time Start	7/31 @ 12:00 PM
Location	Park [illegible]	Time End	8/2 @ 9:00 am
Trap Day	2nd check		
Temp	72°F		
Weather	Partly cloudy, SSW 12 Mph		

Species	Sex	Photo (Y/N)	Notes
			* Nothing

BUF 420

Small Mammal Trapping

Buffalo River

Date 8/1 @ 9^{45} am	Time Start 7/31 @ 12^{15} PM
Location Riverbend	Time End
Trap Day 1st check	
Temp 72°F	
Weather partly cloudy [illegible]	

Species	Sex	Photo (Y/N)	Notes
			* two traps [illegible] full of [illegible]
			[illegible]
			* 2 adult ♂ W[illegible]
			* RTHA ([illegible])
			* Lots of ~~[illegible]~~ BARS + [illegible]
			feed[illegible] [illegible]
			* [illegible]
			* 2 SUSP
			* 1 ♂ [illegible]
			* 1 NOMO ([illegible])

BUF420

Small Mammal Trapping | **Buffalo River**

Date	8/2 @ 9am	Time Start	7/31 @ 12pm
Location	Riverbend	Time End	8/2 @ 9am
Trap Day	2nd check		
Temp	72°F		
Weather	Partly Cloudy SSW 12 mph		

Species	Sex	Photo (Y/N)	Notes
			* Nothing

Survey Location	**Date**	**Trapping Event**	***Peromyscus* spp.**
Seneca Bluffs - Pt 116	10/16/2012	2nd (October)	
Seneca Bluffs - Pt 116	10/17/2012	2nd (October)	
Bailey Woods - Pt 112	10/16/2012	2nd (October)	
Bailey Woods - Pt 112	10/17/2012	2nd (October)	
Riverbend - 111a	10/16/2012	2nd (October)	1
Riverbend - 111a	10/17/2012	2nd (October)	
Pork Pie - Pt 119	10/16/2012	2nd (October)	
Pork Pie - Pt 119	10/17/2012	2nd (October)	
Katherine St - Pt 107/109	10/16/2012	2nd (October)	
Katherine St - Pt 107/109	10/17/2012	2nd (October)	
Fuhrman Blvd - Pt 102	10/16/2012	2nd (October)	3
Fuhrman Blvd - Pt 102	10/17/2012	2nd (October)	3

Appendix IX – Bi-Monthly Progress Reports

Katherine Winkler
Buffalo River Projects Manager
Buffalo-Niagara RIVERKEEPER
1250 Niagara Street
Buffalo, NY 14213

Cc: Frederick Luckey, USEPA; Donna Ringel, USEPA; Katy Brown, BNR; Jason Carlson, AES; Sheila Hess, CC

RE: Progress Report for the 2011-12 Wildlife Survey of the Lower Buffalo River Area of Concern, Buffalo, New York

Dear Ms. Winkler,

The following progress report provides a summary of all actions associated with the Lower Buffalo River (LBR) Area of Concern (AOC) Wildlife Survey from date of contract signing (August 5, 2011) to the current date (December 16, 2011). Activity is separated by month for ease of reference.

August 2011

Immediately following contract negotiations, Applied Ecological Services (AES) and Buffalo Niagara RiverKeeper (BNR) began the process of generating a project-specific Quality Assurance Project Plan (QAPP). A conference call was held on August 19, 2011 (attendees included Project and Quality Assurance Officers from AES, BNR, CC, and USEPA) to discuss project specifics and share any data, questions, concerns, or otherwise with the project team. A series of productive follow-up communications ensued. Included within these communications were suggested templates, contact information, and an addendum, dated August 23, 2011, from BNR to AES titled 'Guidance for Species and Locations'. This document detailed targeted animal species and specific locations to be included within the study design.

September 2011

AES submitted Version 1 of the QAPP for review to the United States Environmental Protection Agency (USEPA) Project Officer, Frederick Luckey, on September 9, 2011. After a speedy review process, AES received comments from USEPA regarding Version 1 on September 26, 2011. AES staff spent the remainder of the month making the recommended changes to the document for re-submission.

October 2011

On October 3, 2011 AES submitted Version 2 of the QAPP for a Wildlife Survey of the LBR AOC. A response letter was sent to USEPA Project Officer, Frederick Luckey, by Sarah Peterson, USEPA Region 2 on October 4, 2011. Within the message were two recommended changes which USEPA QAOs felt were not fully addressed in Version 2, but were not critical enough to hold up the project. AES plans to satisfy these recommendations concurrent with conducting field work, as per the approval notice received on October 31, 2011 by USEPA Project Officer, Frederick Luckey.

November 2011

A site visit was planned and conducted on November 21 and 22, 2011. The main focus of this site visit was to geo-reference avifaunal point count locations, identify key areas for herpetofaunal searches and small mammal trapping, and determine access to preferred site locations throughout the AOC. On November 21, 2011, AES Wildlife Biologist, Michael McGraw, geo-referenced 18 avifaunal survey point locations and identified target areas for small mammal trapping and herpetofaunal searches. In large, these survey locations coincide with the proposed survey locations within the QAPP. Additionally, road cruising transects were ground-truthed through this site orientation exercise. Two target areas were unapproachable due to fencing and posted trespassing signage.

On November 22, 2011 AES conducted point-count surveys at each of the 18 selected avifaunal survey locations. A total of 92 separate bird observations, totaling 27 species, were recorded during this survey event. Of these 92 observations, 59.75% are comprised of 7 species (CAGO, RBGU, MALL, AMCR, EUST, ROPI, and HOSP) (Chart 1). The same seven species comprise 82% of all individual birds observed during this survey effort (Chart 2). Overall diversity observed was low, with migrant waterfowl only observed in Lake Erie (except for Canada goose and Mallard duck observed in the LBR) and low abundance and diversity of wintering and resident passerine (Table 1).

BNR facilitated communications with David Stebbins, Senior Project Manager of Erie County Industrial Development Agency who subsequently has granted us access to the RiverBend site. Mr. Stebbins also provided contact information for CSX, property owners of the only large land tract which we have yet to access, the Concrete Central site. AES will be contacting CSX to request permission to survey on this property moving forward. Below is an image showing both the geo-referenced survey point locations (in yellow) and the anticipated additional survey points to be added moving forward (in orange), totaling 26 locations (Map 1).

Figure 1. Juvenile merlin (*Falco columbarius*) perched near BUF 106. Photograph by Michael J. McGraw on November 22, 2011.

Chart 1. Species Diversity as a function of AOC Distribution on Nov 22, 2011

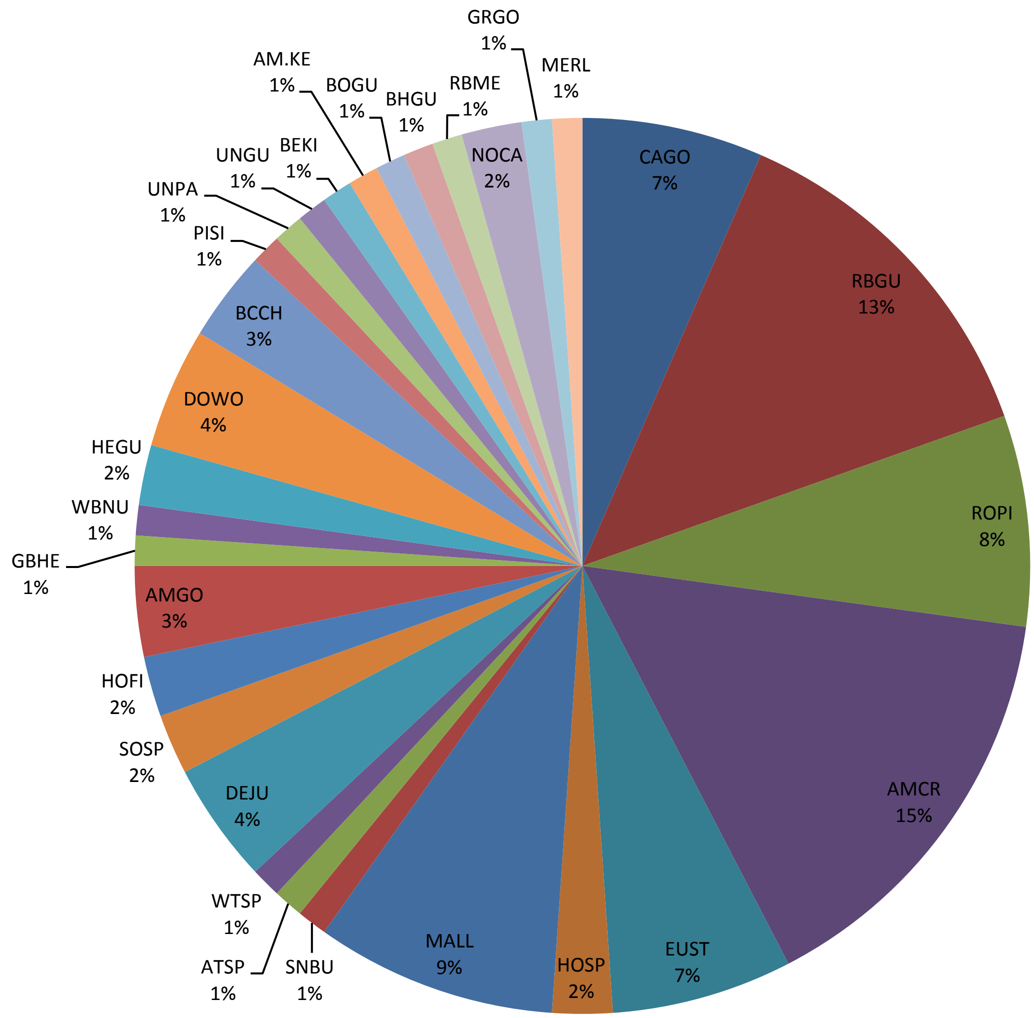


Chart 2. Relative Abundance of Species Observed

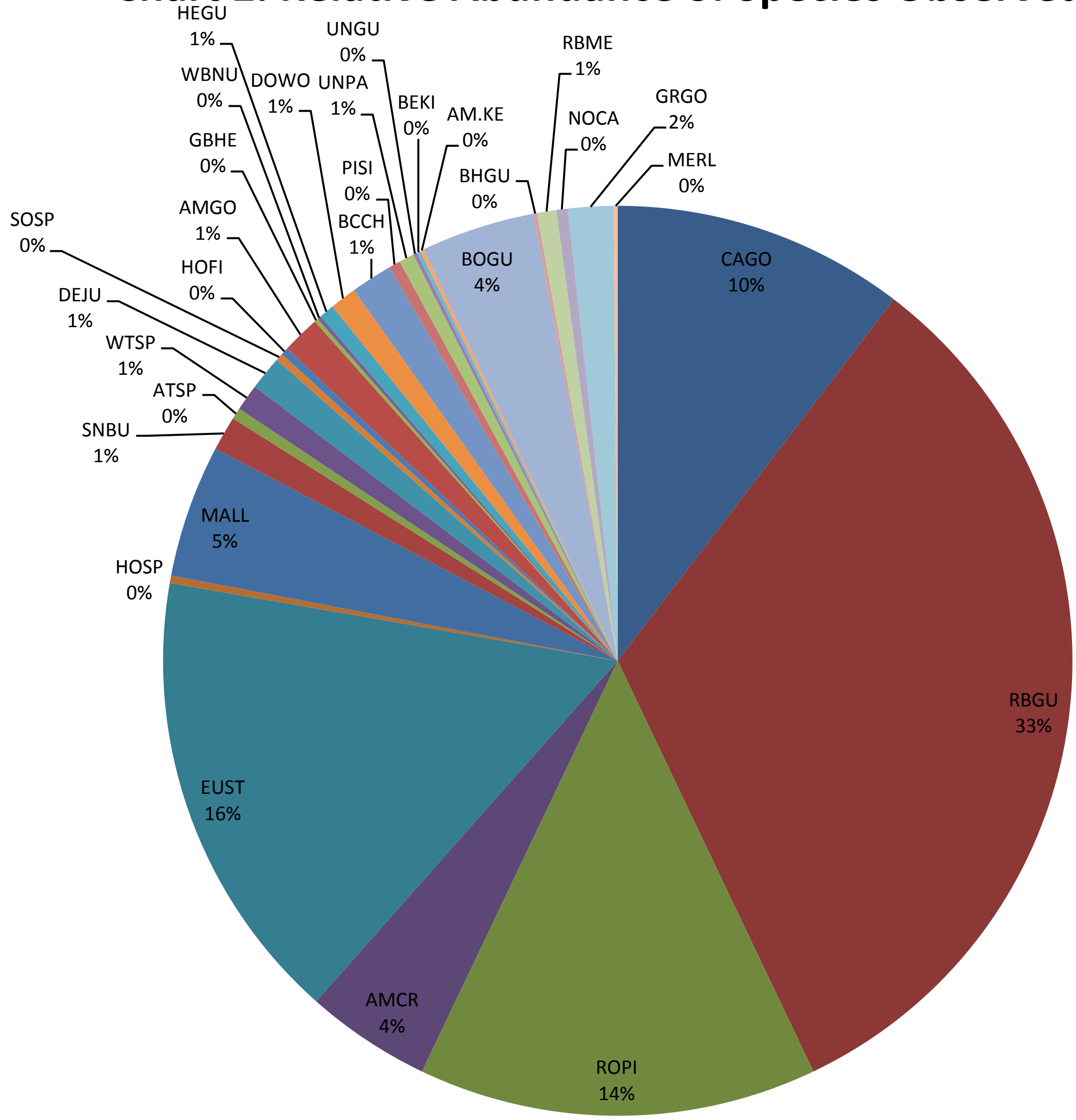


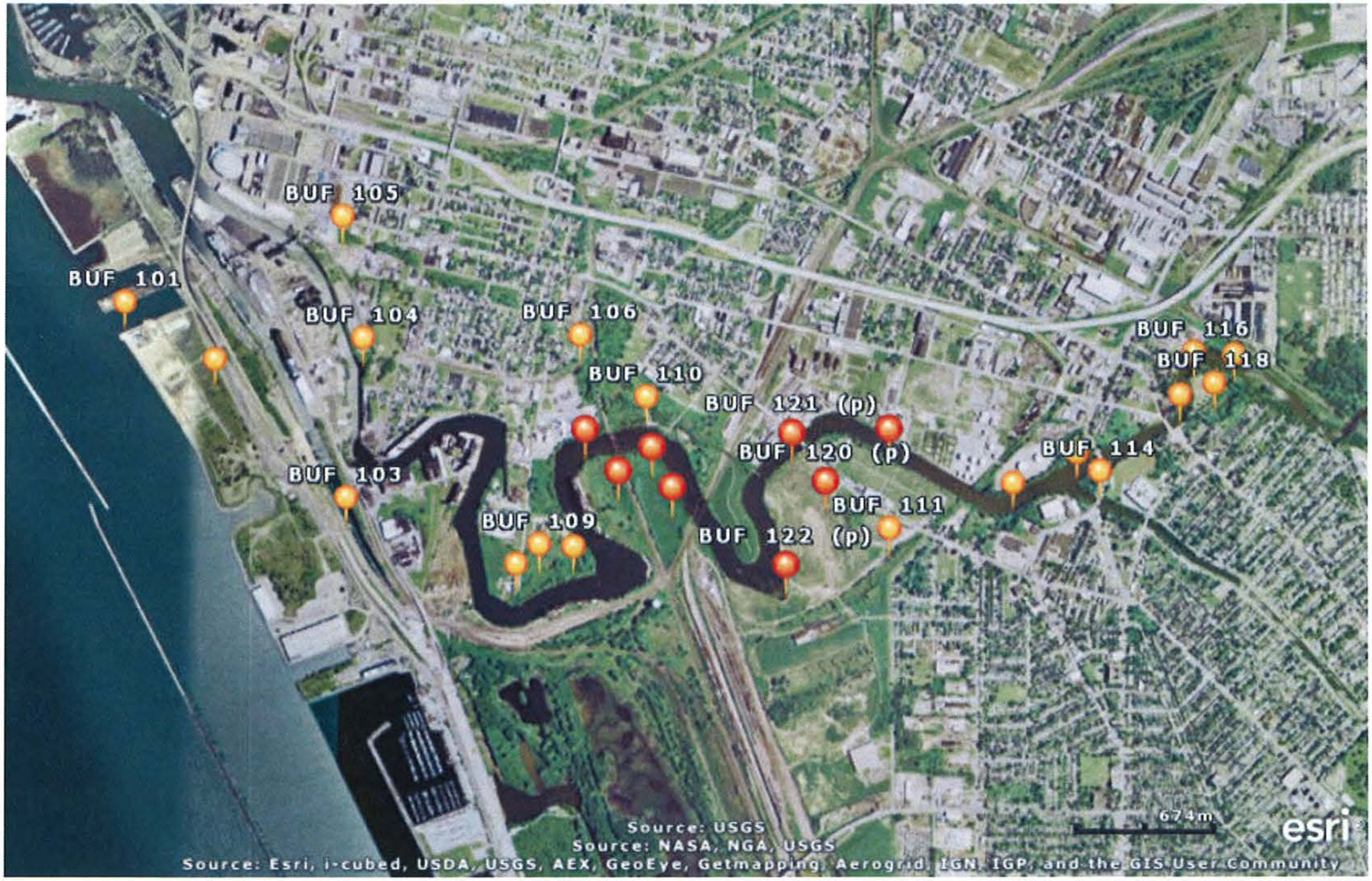
Table 1. Lower Buffalo River Avifaunal Point Count Observation Database - AES #11-0543 - 2011-12

Date	Point Location ID	Ambient Temp (°F)	Cloud Cover (%)	Wind Speed (BWS)	Wind Direction	Observer(s)	Start	Species (alpha)	Abundance	Behavior	Direction from Point	Distance from Point (M)	Flight Direction	Flight Height (M)	Period Observed	Notes
11/22/2011	BUF 101	33	20	2	NE	MJM	715	RBGU	>100	F/P	NW	50-500	VAR	0-100	ALL	Accompanied by KW of BNR
11/22/2011	BUF 101	33	20	2	NE	MJM	715	BOGU	~30	F/P	NW	100	VAR	0-100	ALL	Accompanied by KW of BNR
11/22/2011	BUF 101	33	20	2	NE	MJM	715	BHGU	1	F/P	NW	125	VAR	0-20	3	rare bird. In with BOGU flock
11/22/2011	BUF 101	33	20	2	NE	MJM	715	RBME	5	Fo/P	W	75	N/A	N/A	3	three drake, 2 hen
11/22/2011	BUF 101	33	20	2	NE	MJM	715	UNGU	1	F	NW	500	N	50	3	large gull sp.
11/22/2011	BUF 101	33	20	2	NE	MJM	715	AMCR	2	F/P/C	N	75	S	15	3	Accompanied by KW of BNR
11/22/2011	BUF 102	33	20	2	NE	MJM	736	CAGO	14	F	N	100	N	50	1	Accompanied by KW of BNR
11/22/2011	BUF 102	33	20	2	NE	MJM	736	RBGU	>100	F	W	300	N/VAR	0-100	ALL	Accompanied by KW of BNR
11/22/2011	BUF 102	33	20	2	NE	MJM	736	SNBU	9	F/C	NW	300	N	15	1	small flock, flushed by dog walker along coast
11/22/2011	BUF 102	33	20	2	NE	MJM	736	HEGU	3	F	W	300	N	20	2	Accompanied by KW of BNR
11/22/2011	BUF 102	33	20	2	NE	MJM	736	AM.KE	1	P/E	NNW	150	N/A	N/A	3	male with small mammal prey
11/22/2011	BUF 103	33	10	2	NE	MJM	752	MALL	6	P	E	5	N/A	N/A	1	Accompanied by KW of BNR
11/22/2011	BUF 103	33	10	2	NE	MJM	752	ROPI	>40	F	E	200	NE	50	1	Accompanied by KW of BNR
11/22/2011	BUF 103	33	10	2	NE	MJM	752	EUST	3	F	E	50	NE	25	3	Accompanied by KW of BNR
11/22/2011	BUF 103	33	10	2	NE	MJM	752	BEKI	1	P	NE	150	N/A	N/A	3	Accompanied by KW of BNR
11/22/2011	BUF 103	33	10	2	NE	MJM	752	AMCR	4	F	W	10	VAR	10	3	Accompanied by KW of BNR
11/22/2011	BUF 104	35	5	1	NE	MJM	812	AMCR	1	F	W	20	N	10	1	Accompanied by KW of BNR
11/22/2011	BUF 104	35	5	1	NE	MJM	812	EUST	6	C	SW	75	N/A	N/A	1	Accompanied by KW of BNR
11/22/2011	BUF 104	35	5	1	NE	MJM	812	ROPI	19	F	S	75	N	25	2	Accompanied by KW of BNR
11/22/2011	BUF 105	38	5	1	NE	MJM	829	HOFI	3	F	NW	5	S	10	1,4	Accompanied by KW of BNR
11/22/2011	BUF 105	38	5	1	NE	MJM	829	RBGU	1	F	E	0	NW	10	1	Accompanied by KW of BNR
11/22/2011	BUF 105	38	5	1	NE	MJM	829	CAGO	4	Fo	W	75	N/A	N/A	2	Accompanied by KW of BNR
11/22/2011	BUF 105	38	5	1	NE	MJM	829	ROPI	15	F	N	40	SE	15	3,4	Accompanied by KW of BNR
11/22/2011	BUF 105	38	5	1	NE	MJM	829	EUST	4	P	SE	100	N/A	N/A	3	Accompanied by KW of BNR
11/22/2011	BUF 105	38	5	1	NE	MJM	829	HOSP	1	C	N	15	N/A	N/A	4	Accompanied by KW of BNR
11/22/2011	BUF 106	38	0	1	NE	MJM	847	MERL	1	P	W	50	N/A	N/A	1	Accompanied by KW of BNR
11/22/2011	BUF 106	38	0	1	NE	MJM	847	AMCR	6	P	N	20	N/A	N/A	1	Accompanied by KW of BNR
11/22/2011	BUF 106	38	0	1	NE	MJM	847	RBGU	17	F	S	25	SSW	10	ALL	Accompanied by KW of BNR
11/22/2011	BUF 106	38	0	1	NE	MJM	847	HOSP	1	C	E	15	N/A	N/A	2	Accompanied by KW of BNR
11/22/2011	BUF 106	38	0	1	NE	MJM	847	AMGO	2	C/F	E	10	E	5	2	Accompanied by KW of BNR
11/22/2011	BUF 106	38	0	1	NE	MJM	847	NOCA	1	C	E	5	N/A	N/A	2	Accompanied by KW of BNR

11/22/2011	BUF 106	38	0	1	NE	MJM	847	DEJU	3	C	W	5	N/A	N/A	3	Accompanied by KW of BNR
11/22/2011	BUF 106	38	0	1	NE	MJM	847	EUST	2	P	NW	200	N/A	N/A	3	Accompanied by KW of BNR
11/22/2011	BUF 106	38	0	1	NE	MJM	847	HOFI	2	P	NW	200	N/A	N/A	3	Accompanied by KW of BNR
11/22/2011	BUF 106	38	0	1	NE	MJM	847	BCCH	1	C	N	25	N/A	N/A	3	Accompanied by KW of BNR
11/22/2011	BUF 107	38	0	2	NE	MJM	908	RBGU	3	F	S	100	E	30	2,3	
11/22/2011	BUF 107	38	0	2	NE	MJM	908	AMCR	3	F	SW	100	E	30	3	
11/22/2011	BUF 107	38	0	2	ENE	MJM	908	ROPI	12	F	N	150	W	25	3,4	
11/22/2011	BUF 108	38	0	2	ENE	MJM	921	CAGO	14	P/Fo	S	250			1	
11/22/2011	BUF 108	38	0	2	ENE	MJM	921	RBGU	1	F	NW	100	S	50	1	
11/22/2011	BUF 108	38	0	2	ENE	MJM	921	ROPI	2	F	E	75	W	30	3	
11/22/2011	BUF 109	38	0	3	ENE	MJM	933	AMCR	3	F	W	100	S	10	2	
11/22/2011	BUF 109	38	0	3	ENE	MJM	933	SOSP	1	C	SE	50	N/A	N/A	3	
11/22/2011	BUF 110	38	50	1	ENE	MJM	955	AMGO	7	Fo	N	10	N/A	N/A	1	Accompanied by MW of BNR
11/22/2011	BUF 110	38	50	1	ENE	MJM	955	DOWO	2	Fo	N	10	N/A	N/A	1	Accompanied by MW of BNR
11/22/2011	BUF 110	38	50	1	ENE	MJM	955	CAGO	8	P	SE	>250	N/A	N/A	1	Accompanied by MW of BNR
11/22/2011	BUF 110	38	50	1	ENE	MJM	955	DEJU	1	Fo	NNW	10	N/A	N/A	2	Accompanied by MW of BNR
11/22/2011	BUF 110	38	50	1	ENE	MJM	955	RBGU	7	F	SE	200	VAR	30	2	Accompanied by MW of BNR
11/22/2011	BUF 110	38	50	1	ENE	MJM	955	MALL	5	P	SE	250	N/A	N/A	2	Accompanied by MW of BNR
11/22/2011	BUF 110	38	50	1	ENE	MJM	955	DEJU	3	P	SE	20	N/A	N/A	2	Accompanied by MW of BNR
11/22/2011	BUF 110	38	50	1	ENE	MJM	955	MALL	3	P	W	200	N/A	N/A	3	Accompanied by MW of BNR
11/22/2011	BUF 110	38	50	1	ENE	MJM	955	ROPI	16	F	N	75	NW	25	3	Accompanied by MW of BNR
11/22/2011	BUF 110	38	50	1	ENE	MJM	955	UNPA	4	F	SE	200	N	20	3	Accompanied by MW of BNR
11/22/2011	BUF 111	38	50	2	E	MJM	1022	AMCR	4	F	N	200	E	10	1	Accompanied by MW of BNR
11/22/2011	BUF 111	38	50	2	E	MJM	1022	ROPI	1	F	SW	75	S	10	3	Accompanied by MW of BNR
11/22/2011	BUF 112	38	50	2	E	MJM	1055	BCCH	7	Fo	S	5	N/A	N/A	1	Accompanied by MW of BNR
11/22/2011	BUF 112	38	50	2	E	MJM	1055	AMCR	2	C	S	20	N/A	N/A	1	Accompanied by MW of BNR
11/22/2011	BUF 112	38	50	2	E	MJM	1055	DOWO	2	C	SW	15	N/A	N/A	1	Accompanied by MW of BNR
11/22/2011	BUF 112	38	50	2	E	MJM	1055	MALL	5	P	NW	150	N/A	N/A	1	Accompanied by MW of BNR
11/22/2011	BUF 112	38	50	2	E	MJM	1055	EUST	5	F	S	0	N	25	2	Accompanied by MW of BNR
11/22/2011	BUF 112	38	50	2	E	MJM	1055	RBGU	6	F	NW	100	VAR	20	2,3	Accompanied by MW of BNR
11/22/2011	BUF 112	38	50	2	E	MJM	1055	HEGU	1	P/C	NW	150	N/A	N/A	2	Accompanied by MW of BNR
11/22/2011	BUF 112	38	50	2	E	MJM	1056	WBNU	1	Fo	S	20	N/A	N/A	3	Accompanied by MW of BNR

11/22/2011	BUF 113	34	100	1	E	MJM	1120	EUST	>100	F/P	S	50	VAR	<10	ALL	
11/22/2011	BUF 113	34	100	1	E	MJM	1120	MALL	2	P	W	100	N/A	N/A	1	
11/22/2011	BUF 113	34	100	1	E	MJM	1120	AMCR	3	F/C	W	100	N	25	1	
11/22/2011	BUF 113	34	100	1	E	MJM	1120	RBGU	2	F	W	25	E	10	1	
11/22/2011	BUF 113	34	100	1	E	MJM	1120	MALL	10	P	SE	75	N/A	N/A	1	
11/22/2011	BUF 113	34	100	1	E	MJM	1120	PISI	3	C	N	100	N/A	N/A	3	
11/22/2011	BUF 113	34	100	1	E	MJM	1120	ATSP	3	C/Fo	N	100	N/A	N/A	3	
11/22/2011	BUF 113	34	100	1	E	MJM	1120	DEJU	2	C/Fo	N	100	N/A	N/A	3	
11/22/2011	BUF 113	34	100	1	E	MJM	1120	WTSP	7	C/Fo	S	75	N/A	N/A	3	
11/22/2011	BUF 114	34	100	1	E	MJM	1133	CAGO	7	P	W	150	N/A	N/A	1	
11/22/2011	BUF 114	34	100	1	E	MJM	1133	RBGU	2	F	W	75	VAR	15	1	
11/22/2011	BUF 114	34	100	1	E	MJM	1133	MALL	2	P	W	15	N/A	N/A	2	
11/22/2011	BUF 114	34	100	1	E	MJM	1133	AMCR	1	P	NE	75	N/A	N/A	3	
11/22/2011	BUF 115	34	100	3	E	MJM	1145	AMCR	1	P	NE	200	N/A	N/A	1	
11/22/2011	BUF 115	34	100	3	E	MJM	1145	MALL	2	P	NNE	175	N/A	N/A	1	
11/22/2011	BUF 115	34	100	3	E	MJM	1145	RBGU	1	F	N	100	SW	30	2	
11/22/2011	BUF 115	34	100	3	E	MJM	1145	CAGO	30	P	W	150	N/A	N/A	2	
11/22/2011	BUF 115	34	100	3	E	MJM	1145	GRGO	12	P	W	120	N/A	N/A	2	Graylag goose. This is a domestic hybrid
11/22/12011	BUF 115	34	100	3	E	MJM	1145	GBHE	1	F/P	N	75	NE	5	3	
11/22/2011	BUF 116	34	100	1	E	MJM	1157	DOWO	2	Fo	N	20	N/A	N/A	1	
11/22/2011	BUF 116	34	100	1	E	MJM	1157	BCCH	3	Fo	N	20	N/A	N/A	1	
11/22/2011	BUF 116	34	100	1	E	MJM	1157	AMCR	4	P	NE	40	N/A	N/A	1	
11/22/2011	BUF 116	34	100	1	E	MJM	1157	SOSP	1	C	S	10	N/A	N/A	1	
11/22/2011	BUF 116	34	100	1	E	MJM	1157	NOCA	2	C/F	N	5	E	1	3	
11/22/2011	BUF 117	34	100	3	E	MJM	1210	AMCR	1	F/C	NW	>100	?	?	1	possibly same bird from last point
11/22/2011	BUF 118	34	100	3	E	MJM	1223	AMCR	1	F	NE	75	WSW	30	1	
11/22/2011	BUF 118	34	100	3	E	MJM	1223	AMGO	1	F/C	N	15	E	10	1	
11/22/2011	BUF 118	34	100	3	E	MJM	1223	RBGU	1	F	NE	100	WSW	30	2	
11/22/2011	BUF 118	34	100	3	E	MJM	1223	DOWO	1	F	W	25	E	10	3	

LBR AOC Avifaunal Survey Points



December 2011

AES has spent time in December processing survey data and photographs from the November survey effort, maintaining the database for data collection, and general project management duties, such as preparing terms for our Sub-consultant/partner, Conservation Connects, and planning our next site visit. AES plans to make the recommended changes to the QAPP and distribute an approval page for signatures. Otherwise, no new activity is planned for the month of December.

Moving forward, AES will submit bi-monthly progress reports starting end of February 2012.

If you have any questions regarding the content of this summary update, please feel free to contact me at any of the numbers/addresses below. Thank you and have a wonderful holiday season.

Sincerely,

Michael J. McGraw
Wildlife Biologist/ Ecologist, Project Manager
Applied Ecological Services, Inc.
10 Balligomingo Road, Bldg. A3
Conshohocken, PA 19428

APPLIED ECOLOGICAL SERVICES

Katherine Winkler
Buffalo River Projects Manager
Buffalo-Niagara RIVERKEEPER
1250 Niagara Street
Buffalo, NY 14213

Cc: Frederick Luckey, USEPA; Donna Ringel, USEPA; Katy Brown, BNR; Jason Carlson, AES; Sheila Hess, CC

RE: Progress Report # 2 for the 2011-12 Wildlife Survey of the Lower Buffalo River Area of Concern, Buffalo, New York.

Dear Ms. Winkler (Katherine),

The following progress report provides a summary of all actions associated with the Lower Buffalo River (LBR) Area of Concern (AOC) Wildlife Survey from January 1 – February 29, 2012. Activity is separated by month for ease of reference.

January 2012

One site visit was conducted in January (1/21-24) to revisit the avifaunal point count locations, conduct some transect-driven meander searches for migrant waterfowl along the LBR and Lake Erie shore (near mouth of LBR), and search for mammal tracks/evidence in snow and imprintable substrates. A total of 93 separate bird observations, totaling 26 species (excluding three unidentified species observations), were recorded during the formal point count survey event. Of these 93 observations, 60.22% are comprised of 7 species (RBGU, ROPI, AMCR, EUST, DOWO, BCCH, & AMGO) (Chart 1). Three species (RBME, COME, & ROPI) comprise 87.29% of all individual birds observed during this survey effort (Chart 2). Overall diversity observed was low, with migrant waterfowl only observed in Lake Erie (in large concentrations), low abundance and diversity of wintering and resident passerine, and some increased activity from migrant gulls and crows moving into the area (Table 1).

Figure 1. Snowy owl (presumed 1st year female) observed at point count BUF 101. Photograph by Michael J. McGraw on January 22, 2012.

A semi-regular phenomenal event where particular arctic resident species migrate in large numbers to certain regions of the United States, known as an irruption, has occurred in North American snowy owl (*Nyctea scandiaca*) populations this winter, with sightings as far south as Texas and Oklahoma. Irruptions are directly linked to food source boom-bust population activity in the Arctic. As a result, three separate snowy owls were observed during this survey effort on January 22, 2012. To clarify, snowy owls are sighted almost every winter in the Lake Erie/Buffalo region and are considered a rare but regular observation. Concentrations throughout the country were remarkable this year and it is likely that the visiting winter population of snowy owls within the project area was larger than the average winter season. Other, more typical winter visitors observed during this effort included American tree sparrow (*Spizella arborea*), pine siskin (*Carduelis pinus*) and snow bunting (*Plectrophenax nivalis*).

Figure 2. Adult male American kestrel perched on a light stand along Fuhrman Blvd.. This animal was not observed during the point count survey, but will be documented via opportunistic observations. Photograph by Michael J. McGraw on January 22, 2012.

Other faunal highlights from this effort include foraging American kestrel (*Falco sparverius*) over a field near the canal, an adult Cooper's hawk (*Accipiter cooperii*) actively chasing flocks of rock pigeon from roosts on abandoned buildings along the river, one little gull (*Larus minutus*), a rare find, flocking with many Bonaparte's gulls over the Lake approximately 500m south of the Buffalo river mouth, and thousands of migrant waterfowl observed between the ice barrier wall and bank of Lake Erie (offsite species will be included in final report, but not in monthly updates).

During this trip, Conservation Connect's Sheila Hess met with Michael McGraw for a site-wide orientation and to assist with in-the-field survey design adjustments (including small mammal trap array siting, and point count and transect logistics).

Tracks, scat, and visual observations confirmed the presence of 9 mammal species (excluding domestic/feral). These species are red fox, raccoon, white-tailed deer, gray squirrel, American beaver, woodchuck, cottontail rabbit, mink, and an unidentified mouse species. A potentially observed mink was spotted along a muddy shoreline of the Buffalo River near BUF 109, but the observation was too brief and distantly viewed to confirm (opposite bank, less than 3 seconds). Mink tracks were observed at two locations (BUF 110 & BUF 107). Sherman live traps, transect searches, and random opportunistic searches will be implemented to continue determining presence/absence of mammals onsite.

February 2012

In February, a fully executed/signed version of the QAPP has been filed. Some minor changes to personnel and the editing of some map features to make them more legible were done. AES and BNR will continue to maintain this document as an updated and referential document with all changes/adjustments made for and through the approval of appropriate USEPA review and project officer staff to maintain compliance and keep clean lines of communication.

In February, no faunal surveys were conducted. The next proposed survey efforts will be in March and April for continued waterfowl migration, shorebird and early passerine migration, calling anuran (frog and toad) presence/absence, and transect searches for mammals and reptiles.

Figure 3. Mixed flock of waterfowl offsite to the southwest (in Lake Erie) consisting mainly of lesser scaup, canvasbacks, redheads, and mallards. Photograph by Michael J. McGraw on January 22, 2012.

Figure 4. Raft of Canada geese just south of BUF 101 along the lake edge. Note numerous duck species in background. Photograph by Michael J. McGraw on January 22, 2012.

Figure 5. Small section of large flock of common and red-breasted mergansers flying north through study location point BUF 101. Photograph by Michael J. McGraw on January 22, 2012.

APPLIED ECOLOGICAL SERVICES

Chart 1. Species Diversity as a Function of AOC Distribution on January 22, 2012

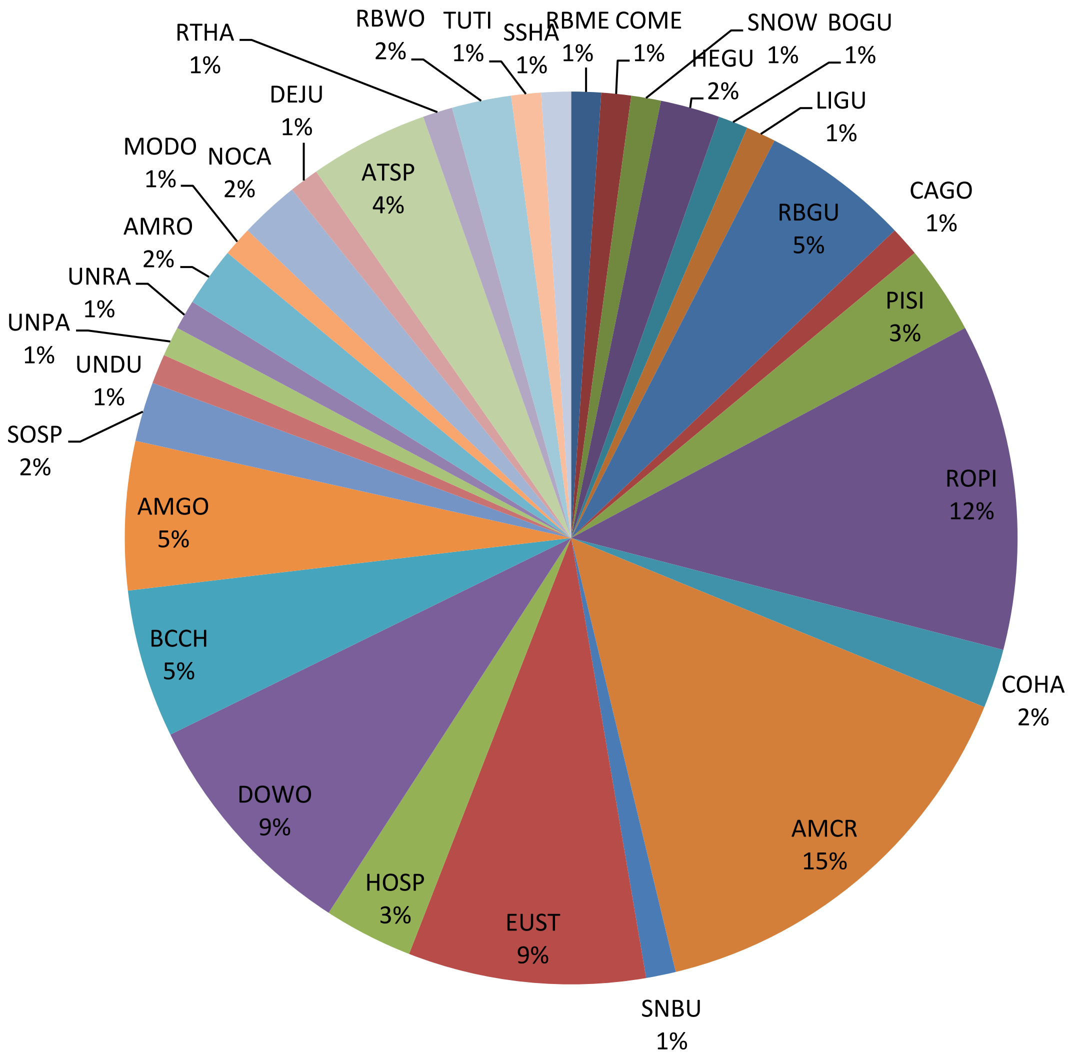


Chart 2. Relative Abundance of Species Observed on January 22, 2012

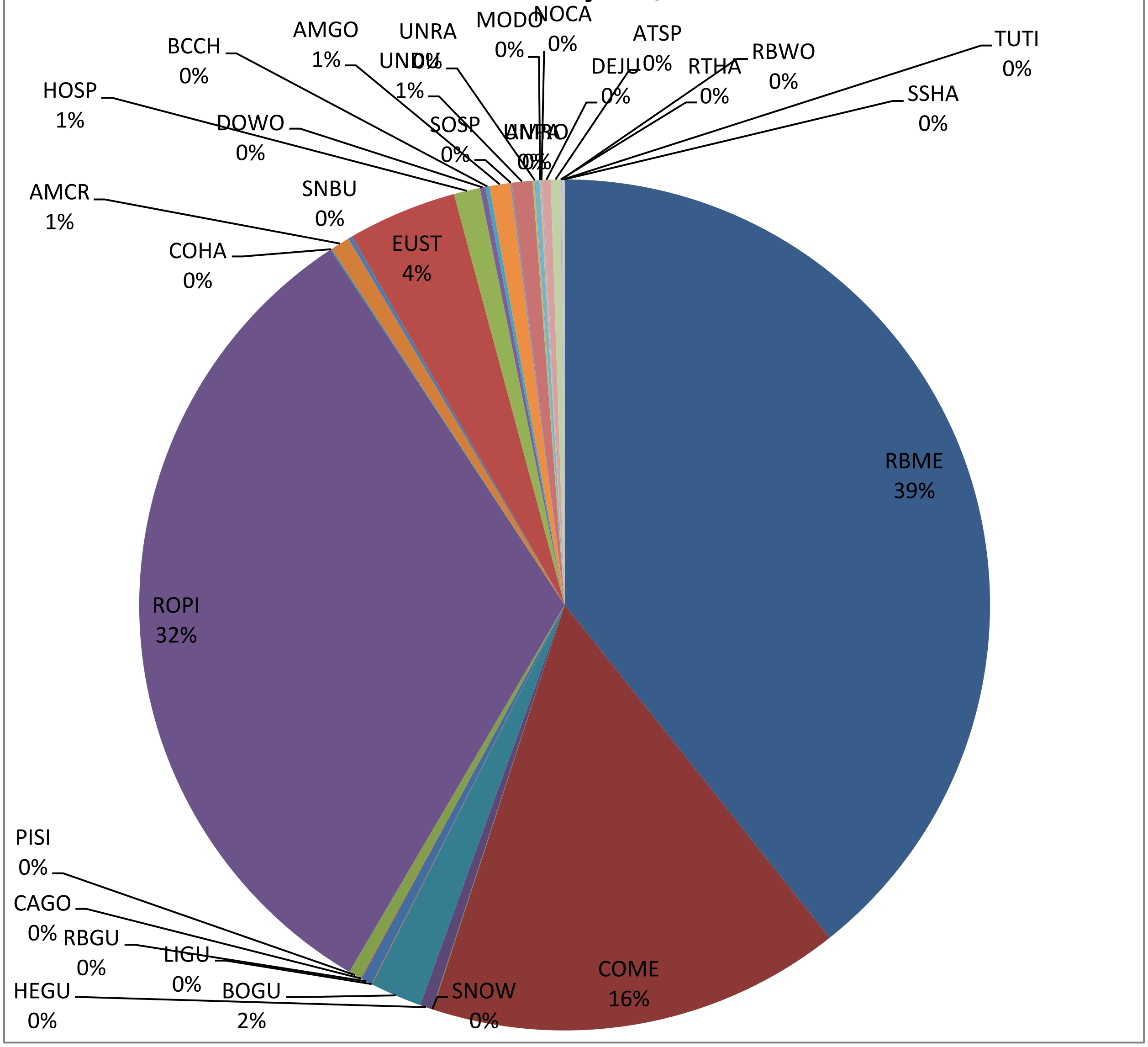


Table 1. Lower Buffalo River Avifaunal Point Count Observation Database - AES #11-0543 - 2011-12

Date	Point Location ID	Ambient Temp (°F)	Cloud Cover (%)	Wind Speed (BWS)	Wind Dir	Obs	Start	Species (alpha)	Abundance	Behavior	Direction from Point	Distance from Point (M)	Flight Direction	Flight Height (M)	Period Observed	
1/22/2012	BUF 101	22	0	1	E	MJM	900	RBME	1500+	Fo/P/F	NW	250-750	N/A	N/A	1,2	
1/22/2012	BUF 101	22	0	1	E	MJM	900	COME	600+	Fo/P/F	NW	250-750	N/A	N/A	1,2	
1/22/2012	BUF 101	22	0	1	E	MJM	900	SNOW	1	F/P	S	200	SE	N/A	1,2	Perched or
1/22/2012	BUF 101	22	0	1	E	MJM	900	HEGU	1	F/P	NW	500	N	N/A	1,2	
1/22/2012	BUF 101	22	0	1	E	MJM	900	BOGU	75	F	NW	500	N/A	N/A	1	
1/22/2012	BUF 101	22	0	1	E	MJM	900	LIGU	1	F	W	500	N/A	N/A	1	with BOGU
1/22/2012	BUF 101	22	0	1	E	MJM	900	RBGU	7	Fo/F	var	var	var	0-20	1	
1/22/2012	BUF 101	22	0	1	E	MJM	900	CAGO	1	F	N	50	S	5	4	
1/22/2012	BUF 101	22	0	1	E	MJM	900	PISI	9	F	N	0	S	75	4	Small flock
1/22/2012	BUF 102	22	0	1	E	MJM	928	HEGU	17	F	W	1000	S	20	1,2	some beyo
1/22/2012	BUF 102	22	0	1	E	MJM	928	RBGU	5	F	NNW	150	N/A	20	1	
1/22/2012	BUF 102	22	0	1	E	MJM	928	ROPI	9	F	E	5	N/A	50	1	
1/22/2012	BUF 102	22	0	1	E	MJM	928	ROPI	150	F	E	200	NE	50	2	
1/22/2012	BUF 102	22	0	1	E	MJM	928	COHA	1	F	E	50	NE	50	3	hunting RC
1/22/2012	BUF 102	22	0	1	E	MJM	928	ROPI	500	P	NE	1000	N/A	N/A	3	Perched/R
1/22/2012	BUF 103	22	20	1	E	MJM	948	SNBU	6	F	W	20	S	75	2	Flyover
1/22/2012	BUF 104	25	10	0-1	E	MJM	1003	AMCR	1	P	SE	250	N/A	N/A	1	
1/22/2012	BUF 104	25	10	0-2	E	MJM	1003	EUST	6	P	E	200	N/A	N/A	1	feeding in
1/22/2012	BUF 104	25	10	0-3	E	MJM	1003	HOSP	10	P	S	50	N/A	N/A	1	feeding in
1/22/2012	BUF 104	25	10	0-4	E	MJM	1003	AMCR	1	F	NE	150	N	25	2	
1/22/2012	BUF 105	25	0	1	E	MJM	1016	ROPI	2	F	E	75	NW	30	1	
1/22/2012	BUF 105	25	0	1	E	MJM	1016	AMCR	2	F/C	S	500	?	?	1	calling
1/22/2012	BUF 105	25	0	1	E	MJM	1016	EUST	1	P/F	S	500	W	20	2	
1/22/2012	BUF 105	25	0	1	E	MJM	1016	COHA	1	Fo/F	S	500	W	20	2	in pusuit o
1/22/2012	BUF 105	25	0	1	E	MJM	1016	DOWO	1	P/C	E	25	N	20	2	
1/22/2012	BUF 106	25	0	1	E	MJM	1029	HOSP	10	C/Fo	W	100	N/A	N/A	1	near white
1/22/2012	BUF 106	25	0	1	E	MJM	1029	RBGU	1	F	W	100	SW	30	1	
1/22/2012	BUF 106	25	0	1	E	MJM	1029	BCCH	1	C	N	150	N/A	N/A	2	
1/22/2012	BUF 106	25	0	1	E	MJM	1029	PISI	4	F	N	50	SE	30	2	
1/22/2012	BUF 106	25	0	1	E	MJM	1029	AMCR	1	C	E	200	N/A	N/A	3	
1/22/2012	BUF 106	25	0	1	E	MJM	1029	AMGO	1	C	NE	100	N/A	N/A	3	
1/22/2012	BUF 106	25	0	1	E	MJM	1029	EUST	1	P	SW	200	N/A	N/A	3	
1/22/2012	BUF 107	28	10	0-1	E	MJM	1109	BCCH	2	C/Fo	S	25	N/A	N/A	1	

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1/22/2012	BUF 107	28	10	0-1	E	MJM	1109	SOSP	1	C	SE	20	N/A	N/A	2	
1/22/2012	BUF 108	25	0	2	E	MJM	1045	DOWO	1	F/C/P	SE	200	NW	15	1	
1/22/2012	BUF 108	25	0	2	E	MJM	1045	ROPI	26	F	S	300	W	30	1	from Cargi
1/22/2012	BUF 108	25	0	2	E	MJM	1045	AMGO	1	F	ESE	50	WNW	10	1	male
1/22/2012	BUF 108	25	0	2	E	MJM	1045	ROPI	2	F	W	250	N	20	2	
1/22/2012	BUF 108	25	0	2	E	MJM	1045	UNDU	30	F	WNW	1000	S	150	2	too far to i
1/22/2012	BUF 108	25	0	2	E	MJM	1045	ROPI	500	P	NW	1000	N/A	N/A	3	roost on bl
1/22/2012	BUF 109	25	10	0-1	E	MJM	1057	EUST	8	F	N	15	S	5	1	
1/22/2012	BUF 109	25	10	0-2	E	MJM	1057	AMRO	4	F	N	10	S	5	1	
1/22/2012	BUF 109	25	10	0-3	E	MJM	1057	BCCH	1	Fo	N	20	N/A	N/A	1	
1/22/2012	BUF 109	25	10	0-4	E	MJM	1057	SOSP	1	P	W	25	N/A	N/A	1	
1/22/2012	BUF 109	25	10	0-5	E	MJM	1057	DOWO	1	Fo	N	20	N/A	N/A	2	
1/22/2012	BUF 109	25	10	0-6	E	MJM	1057	AMCR	3	C	NE	250	N/A	N/A	2	
1/22/2012	BUF 109	25	10	0-7	E	MJM	1057	MODO	2	P/F	NE	75	N	10	3	
1/22/2012	BUF 109	25	10	0-8	E	MJM	1057	NOCA	1	C/P	NW	150	N/A	N/A	3	female
1/22/2012	BUF 110	29	50	1	E	MJM	1125	AMGO	26	F	S	0	NW	30	1	
1/22/2012	BUF 110	29	50	1	E	MJM	1125	PISI	6	F	S	0	NW	30	1	
1/22/2012	BUF 110	29	50	1	E	MJM	1125	UNRA	1	P	ESE	750	N/A	N/A	1	perched or Possible PE
1/22/2012	BUF 110	29	50	1	E	MJM	1125	AMCR	3	C	S	500	N/A	N/A	1	
1/22/2012	BUF 110	29	50	1	E	MJM	1125	DEJU	12	Fo	E	25	N/A	N/A	2	
1/22/2012	BUF 110	29	50	1	E	MJM	1125	DOWO	1	C	S	300	N/A	N/A	3	
1/22/2012	BUF 110	29	50	1	E	MJM	1125	DOWO	1	C	N	40	N/A	N/A	3	
1/22/2012	BUF 111	30	50	0-1	E	MJM	1141	EUST	30	P	E	150	N/A	N/A	1	
1/22/2012	BUF 111	30	50	0-1	E	MJM	1141	AMGO	1	C	SE	100	N/A	N/A	2	
1/22/2012	BUF 111	30	50	0-1	E	MJM	1141	RBGU	2	F	W	1000	S	100	3	
1/22/2012	BUF 111	30	50	0-1	E	MJM	1141	ATSP	4	F/P	E	20	NW	10	3	
1/22/2012	BUF 111	30	50	0-1	E	MJM	1141	AMCR	4	F	W	75	N	10	3	
1/22/2012	BUF 112	31	50	0-1	E	MJM	1200	DOWO	1	C	NE	200	N/A	N/A	1	
1/22/2012	BUF 112	31	50	0-2	E	MJM	1200	ATSP	4	C/P	S	20	N/A	N/A	2	
1/22/2012	BUF 112	31	50	0-3	E	MJM	1200	AMRO	2	P	SE	75	N/A	N/A	3	
1/22/2012	BUF 112	31	50	0-4	E	MJM	1200	RTHA	1	F	SE	200	N	25	4	
1/22/2012	BUF 113	32	75	0	NE	MJM	1228	DOWO	1	Fo	ESE	100	N/A	N/A	1	
1/22/2012	BUF 113	32	75	0	NE	MJM	1228	NOCA	1	C/P	ESE	100	N/A	N/A	1	
1/22/2012	BUF 114	34	85	0	NE	MJM	1216	HOSP	18	P/F	ENE	200	S	15	1,3	
1/22/2012	BUF 114	34	85	0	NE	MJM	1120	RBWO	1	F	ENE	200	S	20	1	
1/22/2012	BUF 114	34	85	0	NE	MJM	1120	AMCR	1	F	W	1000	N	100	2	
1/22/2012	BUF 115	35	85	0	N/A	MJM	1243	ATSP	4	Fo	NW	5	N/A	N/A	1	

APPLIED ECOLOGICAL SERVICES

1/22/2012	BUF 115	35	85	0	N/A	MJM	1243	AMCR	1	P/C	E	150	N/A	N/A	1	
1/22/2012	BUF 115	35	85	0	N/A	MJM	1243	EUST	55	P	N	500	N/A	N/A	2	
1/22/2012	BUF 115	35	85	0	N/A	MJM	1243	ROPI	12	F	N	400	var	30	3	
1/22/2012	BUF 115	35	85	0	N/A	MJM	1243	DOWO	1	Fo/P	NE	250	N/A	N/A	3	
1/22/2012	BUF 116	35	100	1	ESE	MJM	1255	EUST	55	P	NW	200	N/A	N/A	1	
1/22/2012	BUF 116	35	100	1	E	MJM	1255	AMCR	3	C/F	SE	150	N	50	1	
1/22/2012	BUF 116	35	100	1	E	MJM	1255	ATSP	2	C/Fo	SW	50	N/A	N/A	2	
1/22/2012	BUF 117	35	100	1	E	MJM	1307	BCCH	1	C	N	250	N/A	N/A	3	
1/22/2012	BUF 117	35	100	1	E	MJM	1307	AMGO	1	C	SE	100	N/A	N/A	1	
1/22/2012	BUF 117	35	100	1	E	MJM	1307	AMCR	1	F	N	750	NNW	50	1	
1/22/2012	BUF 117	35	100	1	E	MJM	1307	AMCR	2	C	SE	700	N/A	N/A	2	
1/22/2012	BUF 117	35	100	1	E	MJM	1307	ROPI	3	F	E	700	var	30	2	
1/22/2012	BUF 117	35	100	1	E	MJM	1307	UNPA	3	F	E	700	S	30	2	
1/22/2012	BUF 117	35	100	1	E	MJM	1307	AMCR	3	C/P/F	E	100	W	25	3	
1/22/2012	BUF 118	35	100	1	E	MJM	1320	ROPI	8	F	N	15	SE	15	1	
1/22/2012	BUF 118	35	100	1	E	MJM	1320	AMCR	2	F	N	250	W	30	1	
1/22/2012	BUF 118	35	100	1	E	MJM	1320	EUST	1	F	NW	25	E	15	2	
1/22/2012	BUF 118	35	100	1	E	MJM	1320	RBGU	1	F	W	400	S	35	2	following t
1/22/2012	BUF 118	35	100	1	E	MJM	1320	RBWO	1	C	NNW	400	N/A	N/A	3	
1/22/2012	BUF 118	35	100	1	E	MJM	1320	ROPI	20	F	SW	500	var	75	3	balling' - pr
1/22/2012	BUF 118	35	100	1	E	MJM	1320	SSHA	1	F	SW	550	var	90	3	chasing, ga
1/22/2012	BUF 118	35	100	1	E	MJM	1320	BCCH	1	Fo/C	S	50	N/A	N/A	3	
1/22/2012	BUF 118	35	100	1	E	MJM	1320	TUTI	2	Fo/C	S	50	N/A	N/A	3	

Progress Report #3 will consist of data and relevant notes from March and April 2012.

If you have any questions regarding the content of this summary update, please feel free to contact me at any of the numbers/addresses below. Thank you and have a wonderful holiday season.

Sincerely,

Michael J. McGraw
Wildlife Biologist/ Ecologist, Project Manager
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10 Balligomingo Road, Bldg. A3
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Katherine Winkler
Buffalo River Projects Manager
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Buffalo, NY 14213

Cc: Frederick Luckey, USEPA; Donna Ringel, USEPA; Robbyn Drake, BNR; Jason Carlson, AES; Sheila Hess, CC

RE: Progress Report # 3 for the 2011-12 Wildlife Survey of the Lower Buffalo River Area of Concern, Buffalo, New York.

Dear Katherine,

The following progress report provides a summary of all actions associated with the Lower Buffalo River (LBR) Area of Concern (AOC) Wildlife Survey from March 1 – April 30, 2012. Activity is separated by month for ease of reference.

March 2012

No faunal surveys were conducted in the month of March. Access was granted by the Erie County Industrial Development Agency for the Riverbend and Pork Pie Locations in March so, moving forward, an additional four survey points are added to cover this section of the AOC (BUF 119-122). Additionally, two survey point locations (BUF 108 & 109) have been merged due to proximity and surveyor efficiency.

April 2012

In April, migrant bird, calling anuran, and opportunistic mammal surveys were conducted. Below are brief summaries of the efforts and subsequent findings.

Spring passerine migration surveys and searches for migrant waterfowl and shorebirds were conducted using the point count method on April 27, 2012 (Table 1). All established point count locations were visited. Transect searches along the river were conducted to look for migrant shorebird and waterfowl flocks. During the avifaunal assessments in April, 35 species were observed. Most birds observed were year-round residents, but some early migrants were observed as well. One migrant shorebird, a semipalmated plover (*Charadrius semipalmatus*) was observed at the ship canal. Shorebirds on their northward migration in the Buffalo-Niagara region rarely stopover in general (BOS 2002), but may do so within suitable habitat or during adverse weather conditions which temporarily prevent migrants from advancing northward, known as fallout events. The lack of these conditions during survey events likely contributes to the paucity of shorebird species observed in April onsite. The peak for shorebird migration in the region is in mid-May. Strategic overlap in survey effort to maximize survey effectiveness will best attempt to sample this period. A few early spring migrants were observed as well, including field sparrow (*Spizella pusilla*), savannah sparrow (*Passerculus sandwichensis)*, horned lark (*Eremophila alpestris*), tree swallow (*Tachycineta bicolor*), and eastern phoebe (*Sayornis phoebe*). All were observed in locations which are conducive for nesting and upcoming survey events will confirm whether or not these birds stay and breed within the AOC. The cumulative bird list observed to date totals 74 species.

Calling anuran surveys were conducted on April 3 and April 27. No frogs were observed calling on April 3rd, despite suitable conditions. On April 27, northern spring peeper (*Pseudacris c. crucifer*) and American toad (*Anaxyrus americana*) were observed attempting to breed at various locations within the AOC. Due to the land use history and lack of available breeding locations, it is unlikely that a high diversity of amphibians will be found within the survey effort as we move forward. Another calling anuran survey will be conducted in May. In general, calling anuran surveys are proving difficult due to the significant level of noise pollution from surrounding land use practices.

Passive mammal observations resulted in a total of 9 species observed (Table 2). Combining these with previous observations, a total of 12 mammal species have been observed within the LBR AOC thus far (excluding humans ☺). We are awaiting approval for a scientific collection permit to conduct a small mammal trapping survey. Following permit approval, we will deploy Sherman traps at target site locations to sample small mammal populations.

Table 1. Lower Buffalo River Avifaunal Point Count Observation Database - AES #11 0543 - 2011-12

Date	Point Location ID	Ambient Temp (°F)	Cloud Cover (%)	Wind Speed (BWS)	Observer(s)	Start	Species (alpha)	Abundance	Behavior	Distance from Point (M)	Flight Direction	Period Observed	Notes
4/3/2012	BUF 119	47	50	1	NG	2123	CONI	3	F/C	50	N	n/a	during Calling Anuran Survey
4/27/2011	BUF 101	43.8	75	2	NG	1200	RBGU	8	F/Fo	VAR	VAR	ALL	
4/27/2011	BUF 101	43.8	75	2	NG	1200	BUFF	1	P	VAR	VAR	1	
4/27/2011	BUF 101	43.8	75	2	NG	1200	CATE	5	F/Fo	VAR	VAR	2	
4/27/2011	BUF 101	43.8	75	2	NG	1200	HEGU	3	F			3	
4/27/2011	BUF 102	43.5	75	2	NG	1145	RWBL	2	P/F	VAR	VAR	1	
4/27/2011	BUF 102	43.5	75	2	NG	1145	AMRO	6	Fo	VAR	VAR	ALL	
4/27/2011	BUF 102	43.5	75	2	NG	1145	EUST	>20	F			3	
4/27/2011	BUF 103	44.1	100	2	NG	1125	CATE	2	F/Fo			1	
4/27/2011	BUF 103	44.1	100	2	NG	1125	DCCO	1	F			1	
4/27/2011	BUF 103	44.1	100	2	NG	1125	CAGO	2	P			1,3	
4/27/2011	BUF 103	44.1	100	2	NG	1125	RBGU	7	F/Fo			ALL	
4/27/2011	BUF 103	44.1	100	2	NG	1125	MODO	2	F			2	

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4/27/2011	BUF 103	44.1	100	2	NG	1125	RWBL	4	F/P			ALL	
4/27/2011	BUF 103	44.1	100	2	NG	1125	SEPL	1	F/Fo			3	
4/27/2011	BUF 103	44.1	100	2	NG	1125	BEKI	1	F			3	
4/27/2011	BUF 103	44.1	100	2	NG	1125	BARS	3	F/Fo			3	
4/27/2011	BUF 104	44.3	100	2	NG	1107	MALL	4	P			1,3	
4/27/2011	BUF 104	44.3	100	2	NG	1107	CAGO	2	P			1,2	
4/27/2011	BUF 104	44.3	100	2	NG	1107	UNGU	4	F			1	
4/27/2011	BUF 104	44.3	100	2	NG	1107	BLJA	1	F			2	
4/27/2011	BUF 104	44.3	100	2	NG	1107	ROPI	>15	F			2	
4/27/2011	BUF 105	44.2	75	2	NG	1220	CAGO	2	P			1	
4/27/2011	BUF 105	44.2	75	2	NG	1220	AMRO	3	P/Fo			1,3	
4/27/2011	BUF 105	44.2	75	2	NG	1220	RWBL	4	P/F			ALL	
4/27/2011	BUF 105	44.2	75	2	NG	1220	EUST	4	P/F			2	
4/27/2011	BUF 105	44.2	75	2	NG	1220	BLJA	1	F			3	
4/27/2011	BUF 105	44.2	75	2	NG	1220	RBGU	4	F/Fo			ALL	
4/27/2011	BUF 105	44.2	75	2	NG	1220	COGR	6	P/F			2	
4/27/2011	BUF 105	44.2	75	2	NG	1220	SOSP	1	P			2	
4/27/2011	BUF 106	43.1	20	1	NG	1021	HOWR	1	P			1	
4/27/2011	BUF 106	43.1	20	1	NG	1021	RWBL	2	P/F			1	
4/27/2011	BUF 106	43.1	20	1	NG	1021	HOSP	3	F			1	
4/27/2011	BUF 106	43.1	20	1	NG	1021	EUST	4	F/P			2	
4/27/2011	BUF 106	43.1	20	1	NG	1021	AMRO	2	Fo			2,3	
4/27/2011	BUF 106	43.1	20	1	NG	1021	NOCA	1	P			3	
4/27/2011	BUF 106	43.1	20	1	NG	1021	SOSP	1	P			3	
4/27/2011	BUF 106	43.1	20	1	NG	1021	RBGU	2	F			3	
4/27/2011	BUF 107	41.1	50	1	NG	1034	CAGO	4	P			1,3	
4/27/2011	BUF 107	41.1	50	1	NG	1034	AMRO	1	P/Fo			1	
4/27/2011	BUF 107	41.1	50	1	NG	1034	UNGU	9	F			2,3	
4/27/2011	BUF 107	41.1	50	1	NG	1034	RWBL	2	F/P			3	
4/27/2011	BUF 108/109	41.6	100	1	NG	1045	RWBL	5	F/P			1,3	
4/27/2011	BUF 108/109	41.6	100	1	NG	1045	WTSP	2	P			1,2	
4/27/2011	BUF 108/109	41.6	100	1	NG	1045	SOSP	2	P			2	
4/27/2011	BUF 108/109	41.6	100	1	NG	1045	EAPH	1	P			2	
4/27/2011	BUF 108/109	41.6	100	1	NG	1045	CAGO	2	P			2	
4/27/2011	BUF 108/109	41.6	100	1	NG	1045	NOCA	1	F			3	
4/27/2011	BUF 108/109	41.6	100	1	NG	1045	WODU	1	F			3	
4/27/2011	BUF 108/109	41.6	100	1	NG	1045	AMRO	1	F/P			3	

4/27/2011	BUF 110	37.4	100	1	NG	954	NOCA	2	P			1,3	
4/27/2011	BUF 110	37.4	100	1	NG	954	CAGO	13	P			ALL	
4/27/2011	BUF 110	37.4	100	1	NG	954	EUST	1	P			1	
4/27/2011	BUF 110	37.4	100	1	NG	954	RWBL	4	P			1,3	
4/27/2011	BUF 110	37.4	100	2	NG	954	MALL	1	P			1	
4/27/2011	BUF 110	37.4	100	2	NG	954	TUVU	2	F			3	
4/27/2011	BUF 110	37.4	100	2	NG	954	HAWO	1	Fo			3	
4/27/2011	BUF 111	36.7	100	2	NG	820	CAGO	2	P	25		1,2	
4/27/2011	BUF 111	36.7	100	2	NG	820	RBGU	3	F	100		1,3	
4/27/2011	BUF 111	36.7	100	2	NG	820	NOCA	1	P	15		1	
4/27/2011	BUF 111	36.7	100	2	NG	820	EUST	2	F/P	40		2	
4/27/2011	BUF 111	36.7	100	2	NG	820	RWBL	3	P	25		2	
4/27/2011	BUF 111	36.7	100	2	NG	820	AMCR	2	P/Fo	50		2,3	
4/27/2011	BUF 111	36.7	100	2	NG	820	MODO	1	F	VAR		3	
4/27/2011	BUF 111	36.7	100	2	NG	820	AMRO	1	P	60		3	
4/27/2011	BUF 112	36.5	100	2	NG	808	AMGO	2	F			1	
4/27/2011	BUF 112	36.5	100	2	NG	808	RWBL	2	F	15		1	
4/27/2011	BUF 112	36.5	100	2	NG	808	MALL	1	P	90		2	
4/27/2011	BUF 112	36.5	100	2	NG	808	CAGO	2	P	100		2	
4/27/2011	BUF 112	36.5	100	2	NG	808	AMCR	3	F	35		2,3	
4/27/2011	BUF 112	36.5	100	2	NG	808	AMRO	1	P	40		3	
4/27/2011	BUF 112	36.5	100	2	NG	808	RBGU	2	F	30		3	
4/27/2011	BUF 113	36.9	100	2	NG	739	EUST	1	P	10		3	
4/27/2011	BUF 113	36.9	100	2	NG	739	BEKI	1	F	75		1	
4/27/2011	BUF 113	36.9	100	2	NG	739	NOCA	1	P	35		1	
4/27/2011	BUF 113	36.9	100	2	NG	739	RBGU	5	F	25		2	
4/27/2011	BUF 113	36.9	100	2	NG	739	SPSA	1	F	5		3	
4/27/2011	BUF 113	36.9	100	2	NG	739	CAGO	2	F	45		1	
4/27/2011	BUF 113	36.9	100	2	NG	739	EUST	3	P/F			1	
4/27/2011	BUF 113	36.9	100	2	NG	739	AMGO	1	F	25		2	
4/27/2011	BUF 113	36.9	100	2	NG	739	SOSP	2	Fo	10		2	
4/27/2011	BUF 114	37.1	100	2	NG	750	NOCA	1	P			1	female
4/27/2011	BUF 114	37.1	100	2	NG	750	EUST	3	P/F			1,3	
4/27/2011	BUF 114	37.1	100	2	NG	750	AMRO	1	P			1	
4/27/2011	BUF 114	37.1	100	2	NG	750	RBGU	5	F			ALL	
4/27/2011	BUF 115	36.8	100	2	NG	719	NOCA	1	P	25		1	
4/27/2011	BUF 115	36.8	100	2	NG	719	SOSP	2	Fo	10		1	
4/27/2011	BUF 115	36.8	100	2	NG	719	AMCR	1	F	20		1	

4/27/2011	BUF 115	36.8	100	2	NG	719	RBGU	4	F			1	
4/27/2011	BUF 115	36.8	100	2	NG	719	CAGO	2	P	50		1,2	
4/27/2011	BUF 115	36.8	100	2	NG	719	RWBL	2	P/F	10		2	
4/27/2011	BUF 115	36.8	100	2	NG	719	AMGO	2	F			2	
4/27/2011	BUF 115	36.8	100	2	NG	719	AMRO	1	Fo	5		3	
4/27/2011	BUF 115	36.8	100	2	NG	719	MALL	1	P	90		3	
4/27/2011	BUF 116	37.6	0	1	NG	703	SOSP	3	P			1,2	
4/27/2011	BUF 116	37.6	0	1	NG	703	RWBL	4	P/F			1	
4/27/2011	BUF 116	37.6	0	1	NG	703	EUST	3	P			2	
4/27/2011	BUF 116	37.6	0	1	NG	703	AMGO	2	F			2,3	
4/27/2011	BUF 116	37.6	0	1	NG	703	AMRO	1	P/Fo			2	
4/27/2011	BUF 116	37.6	0	1	NG	703	RBGU	3	F			3	
4/27/2011	BUF 116	37.6	0	1	NG	703	AMCR	1	F			3	
4/27/2011	BUF 116	37.6	0	1	NG	703	NOCA	1	P			3	
4/27/2011	BUF 117	37.5	0	1	NG	639	EUST	2	P/F	VAR		1	
4/27/2011	BUF 117	37.5	0	1	NG	639	RWBL	4	P	25		1	
4/27/2011	BUF 117	37.5	0	1	NG	639	MALL	1	P	75		1	
4/27/2011	BUF 117	37.5	0	1	NG	639	CAGO	1	P	80		1	
4/27/2011	BUF 117	37.5	0	1	NG	639	RBGU	2	P	VAR		2	
4/27/2011	BUF 117	37.5	0	1	NG	639	NOCA	1	P	20		2	
4/27/2011	BUF 117	37.5	0	1	NG	639	AMGO	1	F	VAR		3	
4/27/2011	BUF 118	36.9	20	2	NG	705	RWBL	6	P	5		1,3	
4/27/2011	BUF 118	36.9	20	2	NG	705	RBGU	5	F			1	
4/27/2011	BUF 118	36.9	20	2	NG	705	SOSP	2	P	2		3	
4/27/2011	BUF 118	36.9	20	2	NG	705	COGR	1	F			3	
4/27/2011	BUF 119	36.8	100	1	NG	934	CAGO	4	Fo/F			1,2	
4/27/2011	BUF 119	36.8	100	1	NG	934	AMRO	2	P			1	
4/27/2011	BUF 119	36.8	100	1	NG	934	RWBL	3	P/F			1	
4/27/2011	BUF 119	36.8	100	1	NG	934	RBGU	3	F			1,3	
4/27/2011	BUF 119	36.8	100	1	NG	934	NOFL	1	F			1	
4/27/2011	BUF 119	36.8	100	1	NG	934	AMCR	2	F			2	
4/27/2011	BUF 119	36.8	100	1	NG	934	TRES	2	F/Fo			2	
4/27/2011	BUF 119	36.8	100	1	NG	934	EUST	>30	F/Fo			3	
4/27/2011	BUF 120	36.9	100	1	NG	915	AMRO	3	P			1,3	
4/27/2011	BUF 120	36.9	100	1	NG	915	SOSP	2	P/F			1,3	
4/27/2011	BUF 120	36.9	100	1	NG	915	RBGU	4	F			2,3	
4/27/2011	BUF 120	36.9	100	1	NG	915	EUST	20	Fo			2	
4/27/2011	BUF 120	36.9	100	1	NG	915	FISP	2	P			3	

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4/27/2011	BUF 121	37.5	100	2	NG	900	MODO	1	F	VAR	5	1	
4/27/2011	BUF 121	37.5	100	2	NG	900	EUST	20	Fo	VAR		1	
4/27/2011	BUF 121	37.5	100	2	NG	900	NOFL	1	P/F	VAR		1	
4/27/2011	BUF 121	37.5	100	2	NG	900	UNGU	3	F	VAR		2	
4/27/2011	BUF 121	37.5	100	2	NG	900	RWBL	1	P	100		2	
4/27/2011	BUF 121	37.5	100	2	NG	900	CAGO	2	Fo	70		2	
4/27/2011	BUF 121	37.5	100	2	NG	900	SAVS	2	P	30		2,3	
4/27/2011	BUF 121	37.5	100	2	NG	900	AMCR	1	F	VAR		3	
4/27/2011	BUF 121	37.5	100	2	NG	900	HOLA	3	P	35		3	
4/27/2011	BUF 122	37.3	100	2	NG	845	CAGO	4	P	70			
4/27/2011	BUF 122	37.3	100	2	NG	845	RBGU	2	F	20			
4/27/2011	BUF 122	37.3	100	2	NG	845	TRES	3	F	VAR			
4/27/2011	BUF 122	37.3	100	2	NG	845	AMRO	1	P	50			
4/27/2011	BUF 122	37.3	100	2	NG	845	MALL	2	P	100			
4/27/2011	BUF 122	37.3	100	2	NG	845	SAVS	2	P	40			2 SINGING MALES
4/27/2011	BUF 122	37.3	100	2	NG	845	AMGO	1	F				

Table 2. Mammal Species Observed in April within the AOC

Common Name	Scientific Name	Location(s) Observed	Notes
eastern chipmunk	*Tamias striatus*	Bailey Woods, Seneca Bluffs, Katherine St.	individuals
eastern gray squirrel	*Sciurus carolinensis*	Bailey Woods, Seneca Bluffs, Katherine St.	individuals
American mink	*Neovison vison*	ship canal, Bailey woods	tracks, scat
raccoon	*Procyon lotor*	ship canal, Smith St., Pork Pie, Katherine St.	tracks, scat, carcass
red fox	*Vulpes vulpes*	Seneca Bluffs, Smith St., Katherine St., Riverbend	tracks, scat, den
woodchuck	*Marmota monax*	BUF 102	den, individual
eastern coyote	*Canis latrans var.*	Riverbend	tracks, scat
white-tailed deer	*Odocoileus virginiana*	Bailey Woods, Pork Pie, Riverbend	tracks, scat
domestic cat		BUF 104	individuals, tracks

APPLIED ECOLOGICAL SERVICES

On April 13, 2012, BNR informed AES of a change in personnel and has requested the subsequent updating of the QAPP to reflect this change. Ms. Robbyn Drake will now be serving as the BNR Quality Assurance Officer (in replacement of Katy Brown). AES will make the necessary changes to the QAPP and re-submit to Mr. Luckey for approval. Report #4 will consist of data and relevant notes from May and June 2012. Within these months, the AES/CC team will conduct neotropical migrant bird surveys, breeding bird surveys, transect searches for herpetofauna and mammals, and conduct another calling anuran survey.

If you have any questions regarding the content of this summary update, please feel free to contact me at any of the numbers/addresses below. Thank you and have a wonderful holiday season.

Sincerely,

Michael J. McGraw
Wildlife Biologist/ Ecologist, Project Manager
Applied Ecological Services, Inc.
10 Balligomingo Road, Bldg. A3
Conshohocken, PA 19428

APPLIED ECOLOGICAL SERVICES

Katherine Winkler
Buffalo River Projects Manager
Buffalo-Niagara RIVERKEEPER
1250 Niagara Street
Buffalo, NY 14213

Cc: Frederick Luckey, USEPA; Donna Ringel, USEPA; Robbyn Drake, BNR; Jason Carlson, AES; Sheila Hess, CC

RE: Progress Report # 4 for the 2011-12 Wildlife Survey of the Lower Buffalo River Area of Concern, Buffalo, New York.

Dear Katherine,

The following progress report provides a summary of all actions associated with the Lower Buffalo River (LBR) Area of Concern (AOC) Wildlife Survey from May1 – June 30, 2012. Activity is separated by month for ease of reference.

May 2012

May brings an abundance of life to the northeast region of the United States. Migratory songbirds and shorebirds race to breeding grounds to get prime locations for setting up territories, attracting mates, and starting the nesting process. Ectotherms (cold-blooded animals) have emerged from overwintering locations and are feeding, basking, and locating mates for breeding. Our team conducted a calling anuran survey, migratory bird surveys, time-constrained searches for herpetofauna, and traversed established transects in search of mammals and herpetofauna in May. Below are summaries of the subsequent observations.

Avifauna – On May 10th and 11th, we conducted point count migratory bird surveys following the previously used methodology. Each survey point was observed for a duration of ten minutes on each day. The sequence of location visits was changed per day to stagger the temporal variable at each point. All opportunistic bird observations made while traveling between points were noted, specifically if the observation included a new species or notable behavior.

Figure 1. A male yellow warbler (*Setophaga petechia*) foraging at the Bailey Peninsula on May 11, 2012. Photo by M. McGraw.

Collectively in May, a total of 86 species were observed within the LBR AOC. Of these, 38 are neotropical migrants (Figures 1-4) which were not observed during the winter/early spring surveys. Highlights include 13 wood warbler species, 5 flycatcher species, and 3 vireo species (Table 1). Cumulatively, the total bird species observed to date is 111. While considerable breeding status information was gathered during these site visits, a breeding bird survey will be focused in June to confirm breeding status (see June section). Evidence of early breeding confirmation was observed is species such a mallard, Canada goose, tree swallow, song sparrow, northern cardinal, blue jay, and downy woodpecker.

Figure 2. A male indigo bunting (*Passerina cyanea*) perched atop a singing perch at Bailey Woods. Photo by M. McGraw on May 11, 2011.

Figure 3. A male savannah sparrow (*Passerculus sandwichensis*) in the meadow at Riverbend maintaining territory amongst neighboring males. Photo by M. McGraw on May 10, 2011

Figure 4. Solitary sandpiper (*Tringa solitaria*) foraging along the Buffalo River at Seneca Bluffs. Photo by M. McGraw on May 11, 2012.

Table 1. Total Species Observed in LBR AOC in MAY 2012 (in taxonomic order)		
Common Name	**Scientific Name**	**Locations Observed**
red-throated loon	*Gavia stellata*	Lake Erie
common loon	*Gavia immer*	Lake Erie
double-crested cormorant	*Phalacrocorax auritus*	Lake Erie, along River
great blue heron	*Ardea herodias*	numerous locations along the River
green heron	*Butorides virens*	Seneca Bluffs, Bailey Woods
Canada goose	*Branta canadensis*	Lake Erie, along River
wood duck	*Aix sponsa*	Seneca Bluffs
mallard	*Anas platyrhynchos*	numerous locations along the River
American black duck	*Anas rubripes*	Lake Erie
turkey vulture	*Cathartes aura*	numerous locations throughout site (soaring)
Coooper's hawk	*Accipiter cooperii*	Bailey Woods, probable breeder
red-tailed hawk	*Buteo jamaicensis*	numerous locations throughout site (soaring)
American kestrel	*Falco sparverius*	Seneca Bluffs and meadow along Lake edge
wild turkey	*Meleagris gallopavo*	Riverbend
killdeer	*Charadrius vociferus*	Riverbend, Ship Canal, meadow near Lake Erie,
solitary sandpiper	*Tringa solitaria*	Seneca Bluffs
spotted sandpiper	*Actitis macularia*	Riverbend, Ship Canal, Edge of Lake Erie, Bailey Peninsula, Smith St.
Bonaparte's gull	*Larus philadelphia*	Near Ice Barrier in Lake Erie
ring-billed gull	*Larus delawarensis*	At ALL sites
herring gull	*Larus argentatus*	Lake Erie and River near Pork Pie site
great black-backed gull	*Larus maritimus*	Lake Erie along Ice Barrier
common tern	*Sterna hirundo*	Numerous in Lake Erie. Colony on Ice Barrier (observed adults carrying food to s
black tern	*Chlidonias niger*	Small group foraging far NNW of BUF 101 in Lake Erie
mourning dove	*Zenaida macroura*	Nearly ALL locations
rock pigeon	*Columba livia*	Mostly around grain elevators between Ship Canal and Ohio Street boat launch
common nighthawk	*Chordeiles minor*	Observed during calling anuran survey
chimney swift	*Chaetura pelagica*	Many open sky locations seen foraging
belted kingfisher	*Ceryle alcyon*	Seneca Bluffs, Bailey Peninsula
red-bellied woodpecker	*Melanerpes carolinus*	Bailey Woods
downy woodpecker	*Picoides pubescens*	Bailey Woods, Seneca Bluffs, Katherine St Peninsula
hairy woodpecker	*Picoides villosus*	Katherine St North
northern flicker	*Colaptes auritus*	Katherine St North
alder flycatcher	*Empidonax alnorum*	Katherine St peninsula
least flycatcher	*Empidonax minimus*	Seneca Bluffs, Bailey Woods
eastern phoebe	*Sayornis phoebe*	Seneca Bluffs, Katherine St Peninsula

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great-crested flycatcher	*Myiarchus crinitus*	Katherine St North, Bailey Woods
eastern kingbird	*Tryrannus tyrannus*	Riverbend (across river)
red-eyed vireo	*Vireo olivaceus*	Bailey Woods, Bailey Peninsula, Seneca Bluffs, Smith St
warbling vireo	*Vireo gilvus*	Smith St
blue-headed vireo	*Vireo solitaria*	Bailey Woods
blue jay	*Cyanocitta cristada*	Many locations
American crow	*Corvus brachyrhynchos*	Many locations
horned lark	*Eremophila alpestris*	Riverbend
northern rough winged swallow	*Steglidopteryx serripennis*	numerous locations along the River
tree swallow	*Tachycineta bicolor*	numerous locations along the River
barn swallow	*Hirundo rustica*	numerous locations along the River
tufted titmouse	*Baeolophus bicolor*	Katherine St
black-capped chickadee	*Poecile atricapilla*	Katherine St, Bailey Woods, Smith St.
white-breasted nuthatch	*Sitta carolinensis*	Bailey Woods
house wren	*Troglodytes aedon*	Many locations
American robin	*Turdus migratorius*	Many locations
gray catbird	*Dumetella carolinensis*	Many locations
northern mockingbird	*Mimus polyglottos*	Many locations
brown thrasher	*Toxostoma rufum*	Riverbend
European starling	*Sturnus vulgaris*	Many locations
cedar waxwing	*Bombycilla cedrorum*	Many locations
Tennessee warbler	*Oreothlypis peregrina*	Bailey Woods
Nashville warbler	*Oreothlypis ruficapilla*	Bailey Woods, Bailey Peninsula
yellow warbler	*Setophaga petechia*	All wooded locations
chestnut-sided warbler	*Setophaga pennsylvanica*	Bailey Woods, Bailey Peninsula
magnolia warbler	*Setophaga magnolia*	Bailey Woods, Bailey Peninsula, Seneca Bluffs, Smith St
black-throated blue warbler	*Setophaga caerulescens*	Bailey Woods
yellow-rumped warbler	*Setophaga coronata*	Bailey Woods, Pork Pie, Bailey Peninsula
black-throated green warbler	*Setophaga virens*	Bailey Woods, Seneca Bluffs, Katherine St Peninsula
palm warbler	*Setophaga palmarum*	Katherine St peninsula
black-and-white warbler	*Mniotila varia*	Bailey Woods
American redstart	*Setophaga americana*	Bailey Woods
mourning warbler	*Geothlypis philadelphia*	Bailey Woods
common yellowthroat	*Geothlypis trichas*	Many locations
northern cardinal	*Cardinalis cardinalis*	Many locations
rose-breasted grosbeak	*Pheucticus ludovicianus*	Many locations
indigo bunting	*Passerina cyanea*	Many locations
field sparrow	*Spizella pusilla*	Riverbend

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chipping sparrow	*Spizella passerina*	Few locations
grasshopper sparrow	*Ammodramus savannarum*	Riverbend
savannah sparrow	*Passerculus sandwichensis*	Riverbend
white-thoated sparrow	*Zonotrichia albicolis*	bailey Woods, Katherine St peninsula
song sparrow	*Melospiza melodia*	Many locations
swamp sparrow	*Melospiza georgiana*	Smith St
bobolink	*Dolichonyx oryzivorus*	Riverbend
brown-headed cowbird	*Molothrus ater*	Many locations
red-winged blackbird	*Agelaius phoeniceus*	Many locations
common grackle	*Quiscalus quiscula*	Many locations
Baltimore oriole	*Icterus galbula*	Katherine St North, Smith St, Seneca Bluffs
American goldfinch	*Carduelis tristis*	Many locations
house sparrow	*Passer domesticus*	Miami St.

Mammals

Driving transects along roads which parallel the river and walking transects which traverse the varying vegetative communities yielded a total of 9 mammal species observed (Table 2), two of which are new to the survey (white-footed mouse and short-tailed shrew). In addition to transect searches, many nesting white-footed mice were found during the active time-constrained search effort for herpetofauna.

Table 2. Mammal Species Observed in April within the AOC

Common Name	Scientific Name	Location(s) Observed	Notes
white-footed mouse	*Peromyscus leucopus*	Riverbend, Ship Canal, Bailey Peninsula	numerous nests with pups
short-tailed shrew	*Blarina brevicauda*	Riverbend	one under cover board
eastern gray squirrel	*Sciurus carolinensis*	All Wooded Tracts and Residential Yards	individuals
raccoon	*Procyon lotor*	Ship Canal, Smith St., Pork Pie, Katherine St.	tracks, scat, carcass (DOR)
opossum	*Didelphis virginiana*	DOR along driving transect	carcass
red fox	*Vulpes vulpes*	Seneca Bluffs	tracks, scat, den
woodchuck	*Marmota monax*	BUF 102 (Field Near Lake Edge)	den, individual
eastern coyote	*Canis latrans var.*	Riverbend	tracks, scat
white-tailed deer	*Odocoileus virginiana*	Bailey Woods, Pork Pie, Riverbend	tracks, scat
domestic cat		BUF 104 (Ohio Street), BUF 105 (Miami Street), Residential Yards	individuals, tracks

Herpetofauna

Calling Anuran Survey – A third and final calling anuran survey was conducted on May 3, 2012. Team surveyors visited all potential breeding locations near established survey points and along the River. During this survey effort, numerous American toads (*Anaxyrus americana*) were observed breeding nearly throughout the AOC. No other amphibians were observed during this effort.

Time-constrained searches were conducted in designated areas 1, 3, 5 & 6 in the QAPP (no access to #2). For clarification, the ship canal area was covered in Area #1 and will be moving forward. A total of 6 reptile and 4 amphibian species were observed during this effort (Table 3).

Table 3. Total Herpetofauna Observed within the LBR AOC in May 2012

Faunal Group	Common Name	Scientific Name	Location(s) Observed	Notes
Amphibians	northern green frog	*Lithobates clamitans melanota*	Ship Canal, Smith Street	along banks of ship canal
	northern leopard frog	*Lithobates pipiens*	Ship Canal, Smith Street	along bank of ship canal
	northern gray treefrog	*Hyla versicolor*		few calling during daytime
	American toad	*Anaxyrus americana*	Seneca Bluffs, Katherine Street Peninsula, Bailey Woods and Peninsula, Smith Street, Riverbend	Found on surface moving. Many calling during CAS at numerous locations
Reptiles	common snapping turtle	*Chelydra serpentina*	Seneca Bluffs	in back channel along muddy bank
	eastern painted turtle	*Chrysemys p. picta*	Smith Street	many in pond at Smith St.
	eastern spiny softshell	*Apalone spinifera*	[redacted]	[redacted]
	northern brown snake	*Storeria d. dekayi*	Riverbend, Ship Canal	under rocks and coverboards
	eastern garter snake	*Thamnophis s. sirtalis*	Riverbend, Ship Canal	under rocks and cover boards
	short-headed garter snake	*Thamnophis brachystoma*	Ship Canal	Possibly introduced population. Found recently predated along bank of Ship Canal. Northernmost confirmed record for this species.

Two notable herpetofaunal observations were made on May 10:

Observation #1 – While conducting a TCS effort along the Ship Canal (TCS Area #1), a recently predated snake was found. Claw and chew marks indicate either a small mammal (skunk or house cat) or avian predator (American kestrel). Since the carcass was largely intact, I suspect a house cat killed this animal, as they are notorious for killing but not eating wildlife. Upon initial glance, it was obvious that this snake was not a common, naturally occurring species to the Buffalo region. Following careful morphological identification, we confirmed this to be a short-headed garter snake (*Thamnophis brachystoma*) (Figure 5). Known historical range of this species in New York is limited to the most southwestern limits of the state and contiguous into northwestern Pennsylvania. A small introduced population is known to Binghamton (south-central NY) as well. The perceived rareness of this observation and the fact that it was dead warranted a call to NYSDEC Buffalo Division. After a brief conversation with a local state herpetologist, we learned that a small population of this species is known to exist within the Tift Preserve. It is suspected that it was introduced with coal shipments via rail back in the 1800's, but the possibility of it being a remnant native population remains. NYSDEC herpetologist Ken Roblee retained the specimen as a voucher (the first Buffalo area *T. brachystoma* vouchered specimen). Technically, this observation constitutes the northernmost *T. brachystoma* observation in the world to date (pretty cool!).

Figure 5. A dead short-headed garter snake found along the bank of the ship canal. This individual was submitted to NYSDEC Buffalo Office as a voucher specimen. Photo by M. McGraw.

Observation #2 – [redacted]. NYSDEC is currently radio-tracking captured softshells to determine where, if at all, these animals are nesting along the Buffalo River banks. Spiny softshell turtles prefer pebble/cobble beaches along large rivers and lakes to dig nests and lay eggs in (Conant and Collins 1984). During our surveys, we will convey any valuable observations regarding behavior/life history of spiny softshells within the Lower Buffalo River AOC to NYSDEC to aid in their ongoing assessment. Previous efforts have been underway for assessing the status of this species in the Finger Lake and Lake Ontario areas (http://www.dec.ny.gov/animals/80726.html).

APPLIED ECOLOGICAL SERVICES

June 2012

In April, migrant bird, calling anuran, time-constrained searches for herpetofauna, and opportunistic mammal surveys were conducted. Below are brief summaries of the efforts and subsequent findings.

Avifauna

Breeding passerine surveys were conducted using the point count method on June 5, 15, & 27, 2012. All established point count locations were visited three times. Breeding codes are derived from the USGS Breeding Bird Survey protocol with modifications succinct with the New York Breeding Bird Atlas Breeding Codes (http://www.dec.ny.gov/animals/7308.html). A total of 51 species of birds were observed during breeding bird surveys. A formal and complete detail of breeding status per species per location will be provided in the final report. Species observed during the June surveys which were not previously documented are great egret (*Ardea egretta*), osprey (*Pandion haliaetus*), and willow flycatcher (*Empidonax traillii*), bringing the cumulatively observed bird species amount to 114.

Herpetofauna and Mammals

Calling Anuran Surveys – A final Calling Anuran Survey was conducted on May 3, 2012. Similar to the previous effort, noise pollution proved to lower the effectiveness of this survey effort onsite. Many American toads were observed calling at numerous locations (more detail to be provided in final report). No other herpetofauna were observed during this effort.

Time-Constrained and Transect Searches – Two TCS and transect efforts were conducted in June as well as opportunistic observations for both faunal groups. No new reptile, amphibian, or mammal species were observed. Details of these efforts will be displayed in the final report.

Progress Report #5 will consist of data and relevant notes from July and August 2012. No activity is scheduled for July. In August, the AES/CC team will conduct Sherman live trapping for small mammals (permit depending) and early season fall migration survey/searches.

If you have any questions regarding the content of this summary update, please feel free to contact me at any of the numbers/addresses below. Thank you and have a wonderful holiday season.

Sincerely,

Michael J. McGraw

Wildlife Biologist/ Ecologist, Project Manager

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A brief update on the progress of the 2012 Faunal Assessment of the Lower Buffalo River Area of Concern

Below is a brief, but informative, update on the progress of the Faunal Assessment of the Lower Buffalo River Area of Concern (AOC) which is currently underway by Applied Ecological Services (AES) on behalf of the Buffalo-Niagara RiverKeeper (BNR). This is an overview (in bullet-point format) of what has been completed thus far as well as what remains, with some highlight photographs added at the end.

Getting Started

- In compliance with United States Environmental Protection Agency (USEPA) grant appropriations, a Quality Assurance Project Plan (QAPP) was drafted for this project, submitted, and reviewed in September 2011.
- Following edits per the review, a final version was submitted by AES/BNR and subsequently approved by USEPA in late October 2011 and the survey work commenced immediately thereafter.

Survey Effort

- From November 15, 2011 through to July 1, 2012, the Applied Ecological Services team has conducted 14 separate field survey events.
- Each field survey event consisted of at least one scientifically valid faunal investigation method, but often multiple (ex. bird survey in morning, reptile survey in afternoon, mammal survey in evening, and amphibian survey at night).
- Survey methods during these visits were appropriate for the latitude, local temperature, and seasonal variation of faunal activity and included bird surveys (wintering, migrant waterfowl, migrant passerine, and breeding bird), herpetofaunal surveys (time-/area-constrained surveys, transect searches, calling anuran surveys, spotting telescope scans for basking turtles, and random opportunistic searches), and mammal surveys (scat and track documentation, driving and pedestrian transect searches, spotting telescope scans for riverside mammals, and random opportunistic searches). Small mammal trapping is pending approval of a submitted NYSDEC scientific collection permit application and is anticipated for August.

Habitats

- Dominant habitat types found within the survey area include open water (river and lake edge), fallow fields in various successional states, abandoned lots (with sparse vegetative colonization), developed (buildings, roads, parking lots, etc), riparian forest, and mowed lawn/savannah (parks). Additional habitat types include restored meadow/forest, pond/emergent marsh complex, and river back channel/island ecosystem.
- Most wildlife habitat tracts within the survey area are relatively small, fragmented, and affected by invasive plant species. Excessive (often unauthorized) human use has contributed to a

degraded ecological condition (soil compaction, trash/dumping, habitat manipulation, invasive species) in some locations.

<u>Summary Observations</u> – Despite the highly urbanized conditions, our team has found an interesting diversity of vertebrates thus far.

- To date, we have observed 127 bird species, 12 reptile and amphibian species, and 11 mammal species within the Lower Buffalo River Area of Concern.
- Since we are in an active field data collection phase, much of the data is yet to be analyzed to determine species abundance, distribution, conservation status, and value of habitat used by these particular species (nesting, foraging, migratory stopover, hibernation, etc).
- Since this is a one year study, it is not intended to provide answers on population trends of local wildlife, but will serve as a foundation for these sorts of analyses in the future.

<u>Moving Forward</u>

- Remaining summer site visits will focus on viviparous snake species, other herpetofauna, and mammal activity. Late season breeding birds and additional breeding evidence from fledgling bird behavior will also be noted.
- Starting in August, our team will focus on the protracted and spectacular fall bird migration, beginning with survey dates to target shorebirds. Trapping for small mammals will also be conducted in August.
- September and October site visits will target passerine (especially neo-tropical migrants), migrant raptors, and hatchling/first year snakes and turtles.

Please feel free to contact me with any questions regarding the survey and/or the contents of this summary update.

Sincerely,

Michael J. McGraw
Wildlife Biologist/Project Manager
Applied Ecological Services, Inc.

Below are some highlight photos from the survey effort thus far. All were taken by Michael McGraw within the AOC during survey efforts.

OPEN WATER

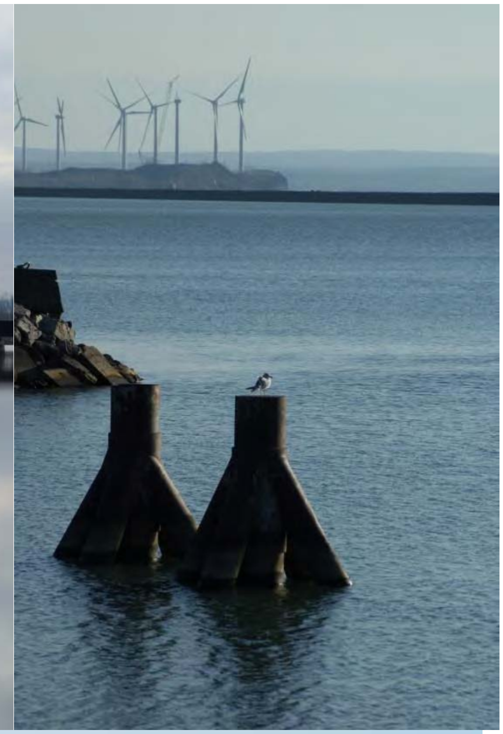
FOREST

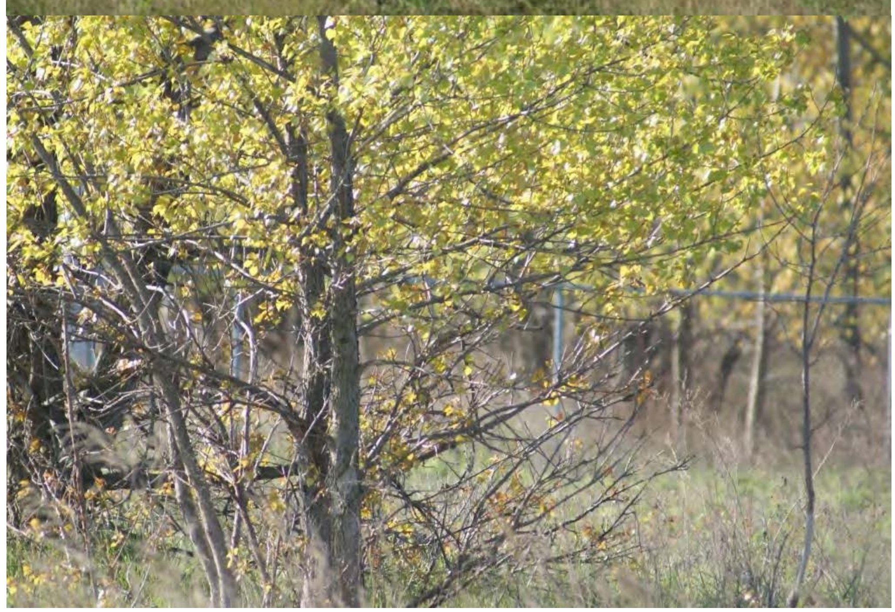





OPEN LAND/MEADOW

LANDSCAPE





Appendix X – Other

Observational Data and Sketches from Field Notebook

North American Bird Alpha Code

Add to final Appendix.

→ Misc. Notes

mjm

Groundtruthing / Project Initiation

11/21/11 BUF 101 - GPS ~~053~~ 054

RBGU(23) ↳ Edge of LAKE / Greenway NAT trail
BOGU(19)
~~COTE~~
RTLO (1) open field / open water /
AMCR (1) decid woodland
Lg gull sp (1)
DEJU (1)

BUF 102 - GPS 055 ↗ Greenway NAT trail
fallow field / open woodland
concrete (west of billboard)
MODO

BUF 103 - GPS 056
Ship canal near head
abandoned rails / open water /
weedy / Rhus sloped buffer /
weedy field

~~No birds~~ POP1

BUF 104 GPS - 057 ↗ LBR Buff R. / Ohio St. Fishing Access by Great Lakes paper
Gray squirrel
Beaver
MOLL
RBGU
AMCR
EAST
RACK LINES
open woodland / park
cotton woods
old ESOW BOX (broken)
POP1

↗ @ Moore + OHIO

BUF - 105 GPS - 058 fallow field /
AMGO Phrag / cottonwood abandoned lot
House cat Rhus / buckthorn
RBGU POP1 Bayberry

BUF-106 ↗O'Connell Ave
GPS 059 - Katherine St NE
tracks/success field/
open wetlnd

DEJU
BCCH
AMGO
pot. raptor nesting/herps
AMCR
EUST
MERL

BUF-107 - GPS060 (S)
End of Katherine

NOCA fallow/riparian
refuse/herps

BUF-108 - 061 - Edge of water/
riparian
↘Kath St.
SE

raccoon
hobo camp (scary!)
RBGU cottonwood
WTDEER knotweed
AMGO fallow field

Buf 109 - 062 along trail
success field
asters, young cottonwood
grasses
snakes?!
Kath st. SC

AMGO
LBJ

BUF-110 - GPS063 End of Smith St.
B/w bridges
open water/rip./
wetland

CANU ABDU
MALL AMCO
NOCA
DEJU
AMGO
COME

BUF-111 GPS 64 on hill N of Abbey Rd.
along PP fence
DEJU (overlooking fallow/success
mammal traps along fence? field
abandoned lot

b/w 3rd + 4th poles
from house @ bend

·BUF 112 - GPS 65 Riparian forest
cottonwood/S nigra/JOPEND
HEGU PAYSON AVE,
RBGU trail behind
AMGO Hydric Soils shopping center
DOWO on right

BUF 113 - GPS 66 Baily Triangle Tip
(park at Topknotch)
MALL RBGU AMCR
DEJU AMGO pot. raptor nest
COHA CAGO opp bank BEAVER ripfor

BUF 114 - GPS 067 other side of Baily St.
facing up-river
(noise pollution)
COHA
AMCR
ROPI
DEJU
open water/
rip roofs

BUF 115 - GPS 068 SENECA Entrance
Willtob PK

CAGO
COHA adult (pot. nesting)
NOCA
ROPI
AMCR

Field/Forest/Open Water
Developed

BUF 116 - GPS 069 Seneca POINT

meadow/rip for.

SOSP
may be good in migration
(sparrows, warblers)

active dirt bike track ☹

GBHE
CAGO nest
AMCR

GWFG! (6)

SNBU?

BUF 117 - GPS 070 SENECA NE.

BUFF
HEGU
GBHE

Edge of rest zone (pull in?)

deer

Phrag + Jap knot mono culture

pot. forage/bask turtles
roost
↑
ducks

+ planted meadow

BUF 118 GPS 071 SENE~~KA~~ 5

SOSP
DEJU

rest. meadow / succes. forest
50 35 (ASH)
developed
15

* 1st of 2011 passerine nests

Beaver

Lunch - make maps
follow-up on access pts
finish QAPP

7AM @ BUF 101

Preserve (N of BUF101)

ATSP
CAWR
RBGU
HOME
MALL

in impoundment
HOME (21)
MALL (5)
BUFF (1)

outside in 'finger'
BUFF (11)

B/w imp. + ice dam
BOGU ~15
RBGU ~10
HEGU ~4

Beyond the WALL
BLSC
HEGU
UNGU

Canada
Raft of LTDU (100's)

[redacted]

[redacted]

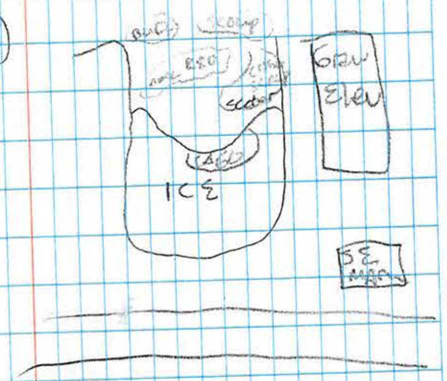
[redacted]

11-0543

1/22/12 (Supplement to Data Sheets)

Waterfront @ Lake Erie

South End Marina
COGO (75)
SCAUP sp (100+)
REDH (50)
(CANVS)
MALL (25)
CAGO (250)
RBGU (6)
BUFF (3)
HEGU (2)
GULL sp. (X)
COME (3)
RBME
BLSC



Gallagher Beach
RBGU (50+)
HEGU (4)
COGO (200)
CANVS (15)
CAGO (6)

SNOW

Original T. brachystoma Obs. Notes

Dave Stallings 716-[illegible]
716 786-08[illegible]
determine acid [illegible]

5/10/12
HOWR
RBGR
SOSP
BCCH
YWAR
GRCA
CAGO
MALL
NOCA

See Point Count Data Sheets

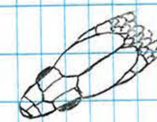
MJM

* Snake observation
5/10/12 1149 MJ McGraw + N Grosse
- Along ship canal in Buffalo (≈300m from Lake Erie)
Dead snake found on shore of ship canal (predated, talon marks)
- Length ≈ 16"
- Scales keeled (except dorsolateral)
- overall brown with three lateral stripes (2 at dorso-lateral, 1 at vertebral) (Lateral stripe in scales 2+3) (Vertebral
- Anal Plate - single
- Head - smaller than neck
  - large parietal scales
  - 3 postocular scales
  - 6 supralabial scales

~~370 Michigan Ave~~
~~DEC Region 9 office (716) 851-7260~~
~~Nat Rec + Poll McKown (716) 372-0645~~

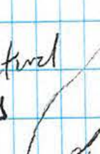
- Ventral scales unpatterned
- 17 scales at midrow

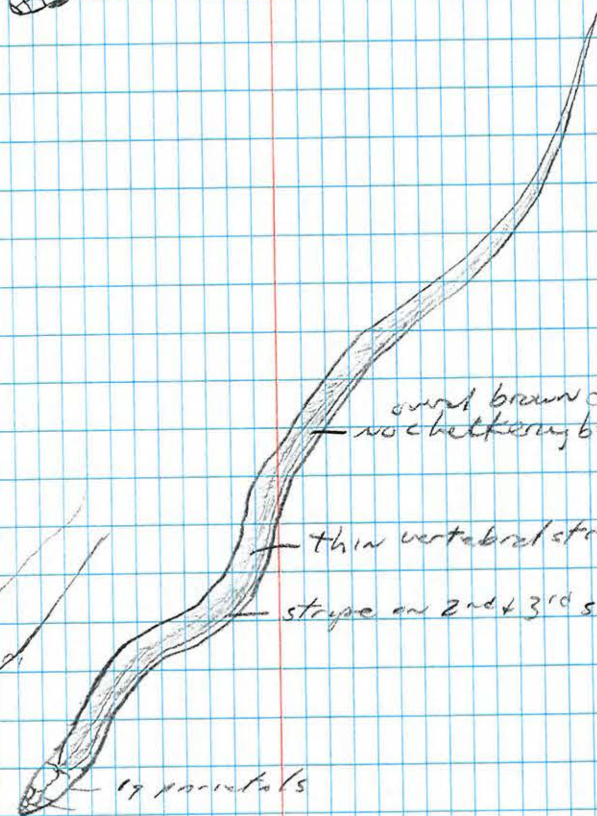
Profile



narrow/short/small

Actual





TCS 1300 - [redacted]

* Short headed garter [redacted]

★ N brown snake @ 1345

★ N green frog

★ N Leop. frog

GRAHE NOMD

Ken Rablee

[redacted]

[redacted]

[redacted]

[redacted]

0500 - 0700 TCS River Bend

sunny, windy 30% cc 64° 50% RH

2 T. sirtalis under board (1 gravid ♀)	mammals 7 wf mice under 1 board 3 wf m	new birds PAWA in tree Kill nest dead BRTH pair along fence
3 subadult T. sirtalis ~~under~~ IN shingle pile)	w t deer	WITU FISP - in clover/ edge near pking
1 storeria DeKayi (in shingle pile		

Mich → R on S Park L on Louisiana → I-90 S
I-90E/NYSThruway (Exit I-52 L twd Bflo Arpt
Exit 52E (Walden Ave East) twd Cheektowaga
4 Walden

440 windy (WNW)
20% CC

5/11/12 0552-0602 BUF Ohio Fish Launch

		DIST	DIR	Flight Height Flm	0-3	3-5	5-10	
TRES		NE	50		!!	nesting - swallow pkg. lot		
COGR		NE	100		!			
YWAR		E	150		!!!			
EUST	Fo/P	S	10		||||| |||||			
~~AMCR~~		N	20		!!			
RBGU		S	20	var	||||| |||||	VAR		
SOSP		NW	175			/		
MOLE	F	SW	200	3m	N	/		
CAGO	P/F	SE				||||| ||||		↑
AMRO	Fo/P					|||		
AMGO		E				/	/	
CHSW	Fo	SSE	75	var			|||||	3 south
SPSA		NW	100				/	
WTSP		NW	200					/

Supplemental Spring Point Count Survey

wind 1 NW

0743-0753 Riverbend Central 0% cc 54°

	BC	D FP	DIS FP	MIN 1	2	3	
SAVS	C	E	300	!			+ Kill nest (2 adults) SSE 100M
RWBL	C/F	SW	40	25			
SUST	C/F	NW	50	15			
GRCA	C	NW	60	!			
AMRO	C	N	75	!			
FISP	C	N	150	!			
HOLA	C	NW	120		!		
SOSP	C	N	100		!		
GRSP	C	NNW	(150)		!		
SAVS	C	NW	30		!		
HOLA	C	W	75			!	
FISP	C	W	75			!	
RBGU	C	SE	150			!	
RBGU	F	N	300			3	W/100M
SAVS	C	N	75			!	
RBGU	F	W	250			16	VAR/150M

0800-0810 RiverBend North — some climatic as above

GRSP	C	NW	5!				
YWAR							
SOSP	C	NE	150				
~~HOLA~~							
BARS	Fo	N	20				NE/w 10m
NRWS	Fo	N	30				NE/w 10m
HOLA	C	W	80				
GRSP	C	S	20	!			
SPSA	C/F	WNW	150		|||||		
TRES	Fo	N	20		!		NE/w 10m
YWAR	C	N	300		!		across river
GBHE	F	NW	400				S/20m
RBGU	F	var	var	75		!!	S/25m
CHSW	F	NE	200			!	
EAKI?	P	N	30			!!	pair across River
~~NOMO~~	P	N	75				

NOFL
CCSP?
FISP 5

* note - 1st RR blue SAVS + GRSP at restoration

56°

0824-0834 RiverBend West

SPSA						
COGR	F	var	var	!!		
RBGU				!!		
RWBL	C	W	10	!		
SAVS	C	S	50	!		
HOLA	C	SE	50	!		
YWAR	C	SW	100		!	
BRBO	S	S	100	!		— 50m S
BRTH	C	SW	200		!	
CAGO	P	N	400		||||	
GRSP	C	E	100		!	
AMCR	F	W	100			!! → N 30

NRWS Fo E 100 var 10 m !
BARS Fo N 20 var 10 !
TRES F Fo NE 75 var 20 m !

Feceline
EABL (S)
BAOR

Seneca Bluff 3 65° 0% cc wind west

#1 1030 - 1040

AMRO
INBU
AMGO
RWBL
YWAR
ROPI
RBGR
CACG
GRHE
GBHE
BARS
WAVI
BCJA
HOWR
COGR
CHSP
CSWA

SB #4 66°

1044 - 1054

SOSP
AMGO
YWAR
WAVI
RWBL
YWAR
BCCH
NAWA
REVI
COGR
MODO
WBNU
BAOR
GRCA
SOSP
INBU
WAVI
TUTI
CHSP
AMCR
HOWR
AMRO
RWBL
RWBL
RBGR
AMKE

pearl crescent
cabbage white
comma or quark

Beaver
w/ tree
squirrel
w/ food

SB #3 11 - 1110 66° same

AMCR
CSWA
YWAR
GRCA
COGR
NOFL
NAWA
BLJA
YWAR
RWBL
RWBL
RWBL
BARS
BHVI
RBGR
AMRO
AMGO
RTHA
WAVI
MALL
SPSA

NOGOLF!

SOSA
BEKI

SB 2
1115 - 1125

AMGO
YWAR
MALL
SOSP
CAGO
BAOR
SOSP
SOSP
HOWR
TUTI
NOCA
EUST (11)
RWBL
WAVI
RWBL
RWBL
YWAR
BAOR
MODO

11:40-50 Lake Erie 101 66° 0% cl wind 2-3 West

SUSP (1) S
KILL (2) SE
BARS (4) E
NRWS (8) E
RBGU (200+) var
HEGU (1) NW
GBBG (2) NW
COTE (100+) N
DCCO (7+30) NW
TRES (2) E
BLTE (23) N
RWBL (1) E
EUST (2) SE

Monarch
cabbage white

1201 - 1211

102 by Billboard
same weather

RWBL (2) E 50
EUST (6) " ↓
AMRO (2) "
SUSP (1) W 100
EUST (10) NW 150
RWBL (1) W 200
RWBL (1) N 250
RBGU (30) W var 0-20 750m away
COTE (1) W 750m
BARS (3) W 100 2m
NRWS (1) W 75 perched
ROPI (~35) E 750 var 40 (flocking/reperching
SWSP (1) N 300
SAVS (1) NW 250
YWAR (1) SSW 500+
RBGU (7) NW 75m S 10m
AMKE (1) NE 100m var 20

(114) crescent sp.

under populus sp. tree is mammal den w/ game trail (Fox?) a second near road GHOG?

103 Ship Canal 1220 - 1230

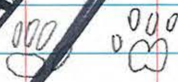
HOSP (2) west 30
RBGU (" var var 20 m
RWBL E 5
BHCO S 30
YWAR S 10
GRHE E 15 (flushed)
CAGO (2+5) N 800m
BARS (5) var var
RWBL SE 25
COGR (3) E 40
HEGU P (1) N 500m
SPSA N 40m
NRWS F N 10 var 5
EUST (mf) N 20 NW 5
MAWL SSE 75
YWAR NE 150
RWBL E 50
RWBL NE 100
MALLA E 50

many fishermen! (≈ 15)

" Monarch
' cabbage white
' Question mark
1 red admiral

Field Sketches of Odonata

[redacted]



small/slightly lg than sketch (mink?)

[redacted]

(Spiketail sp.?)
small dragonfly

habitat- [redacted]
edge of forest

(Skimmer sp.?)

(male whitetail?)
(w/out white yet?)

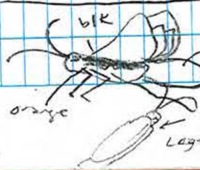
+

Another similar to above, but wider + shorter abdomen + 8 spots (vs 4)

(female whitetail?)

very small spreadwing?

(spreadwing damselfly sp.?)



[redacted]

Four-letter (English Name) and Six-letter (Scientific Name) Alpha Codes for 2055 Bird Species (and 97 Non-Species Taxa) sorted alphabetically by English name

Prepared by Peter Pyle and David F. DeSante
The Institute for Bird Populations
www.birdpop.org

	English Name	4-Letter Code	Scientific Code	6-Letter Code
	Abert's Towhee	ABTO	Melozone aberti	MELABE
	Acadian Flycatcher	ACFL	Empidonax virescens	EMPVIR
	Acorn Woodpecker	ACWO	Melanerpes formicivorus	MELFOR
	Adelaide's Warbler	ADWA	Dendroica adelaidae	DENADE
	African Collared-Dove	AFCD	Streptopelia roseogrisea	STRROS
	African Silverbill	AFSI	Lonchura cantans	LONCAN
	Agami Heron	AGHE	Agamia agami	AGAAGA
	Akekee	AKEK	Loxops caeruleirostris	LOXCAE
	Akepa	AKEP	Loxops coccineus	LOXCOC
	Akiapolaau	AKIA	Hemignathus munroi	HEMMUN
	Akikiki	AKIK	Oreomystis bairdi	OREBAI
	Akohekohe	AKOH	Palmeria dolei	PALDOL
	Alder Flycatcher	ALFL	Empidonax alnorum	EMPALN
+	Aleutian Cackling Goose	ACGO	Branta h. leucopareia	BRAHLE
	Aleutian Tern	ALTE	Onychoprion aleuticus	ONYALE
	Allen's Hummingbird	ALHU	Selasphorus sasin	SELSAS
	Alpine Swift	ALSW	Apus melba	APUMEL
	Altamira Oriole	ALOR	Icterus gularis	ICTGUL
	Altamira Yellowthroat	ALYE	Geothlypis flavovelata	GEOFLA
	Amaui	AMAU	Myadestes woahensis	MYAWOA
	Amazon Kingfisher	AMKI	Chloroceryle amazona	CHLAMA
	American Avocet	AMAV	Recurvirostra americana	RECAME
	American Bittern	AMBI	Botaurus lentiginosus	BOTLEN
	American Black Duck	ABDU	Anas rubripes	ANARUB
+	American Black Duck X Mallard Hybrid	ABDH	Anas rubripes x platy.	ANARUP
	American Coot	AMCO	Fulica americana	FULAME
	American Crow	AMCR	Corvus brachyrhynchos	CORBRA
	American Dipper	AMDI	Cinclus mexicanus	CINMEX
	American Flamingo	AMFL	Phoenicopterus ruber	PHORUB
	American Golden-Plover	AMGP	Pluvialis dominica	PLUDOM
	American Goldfinch	AMGO	Spinus tristis	SPITRI
+	American Green-winged Teal	AGWT	Anas c. carolinensis	ANACCA
	American Kestrel	AMKE	Falco sparverius	FALSPA
	American Oystercatcher	AMOY	Haematopus palliatus	HAEPAL
	American Pipit	AMPI	Anthus rubescens	ANTRUB
	American Pygmy Kingfisher	APKI	Chloroceryle aenea	CHLAEN
	American Redstart	AMRE	Setophaga ruticilla	SETRUT
	American Robin	AMRO	Turdus migratorius	TURMIG
	American Three-toed Woodpecker	ATTW	Picoides dorsalis	PICDOR
	American Tree Sparrow	ATSP	Spizella arborea	SPIARB
	American White Pelican	AWPE	Pelecanus erythrorhynchos	PELERY
	American Wigeon	AMWI	Anas americana	ANAAME
	American Woodcock	AMWO	Scolopax minor	SCOMIN
	Amethyst-throated Hummingbird	ATHU	Lampornis amethystinus	LAMAME

"+" before English name indicates a non-species taxon

*** Four-letter and six-letter codes that, because of conflicts, are not "1st-order" codes are marked with asterisks. See Pyle and DeSante, North American Bird Bander 28:64-79 (2003) for more information.**

	Ancient Murrelet	ANMU	Synthliboramphus antiquus	SYNANT
	Anhinga	ANHI	Anhinga anhinga	ANHANH
	Anianiau	ANIA	Magumma parva	MAGPAR
	Anna's Hummingbird	ANHU	Calypte anna	CALANN
	Antillean Crested Hummingbird	ANCH*	Orthorhyncus cristatus	ORTCRI
	Antillean Euphonia	ANEU	Euphonia musica	EUPMUS
	Antillean Mango	ANMA	Anthracothorax dominicus	ANTDOM
	Antillean Nighthawk	ANNI	Chordeiles gundlachii	CHOGUN
	Antillean Palm-Swift	ANPS	Tachornis phoenicobia	TACPHO
	Antillean Piculet	ANPI	Nesoctites micromegas	NESMIC
	Antillean Siskin	ANSI	Spinus dominicensis	SPUDOM*
	Apapane	APAP	Himatione sanguinea	HIMSAN
	Aplomado Falcon	APFA	Falco femoralis	FALFEM
	Arctic Loon	ARLO	Gavia arctica	GAVARC
	Arctic Tern	ARTE	Sterna paradisaea	STEPAD*
	Arctic Warbler	ARWA	Phylloscopus borealis	PHYBOR
	Arizona Woodpecker	ARWO	Picoides arizonae	PICARI
	Arrowhead Warbler	ARRW*	Dendroica pharetra	DENPHA
	Ash-throated Flycatcher	ATFL	Myiarchus cinerascens	MYICIN
	Ashy Storm-Petrel	ASSP	Oceanodroma homochroa	OCEHOM
	Ashy-faced Owl	AFOW	Tyto glaucops	TYTGLA
	Ashy-tailed Swift	ATSW	Chaetura andrei	CHAAND
	Ashy-throated Bush-Tanager	ATBT	Chlorospingus canigularis	CHLCAG*
	Asian Brown Flycatcher	ABFL	Muscicapa dauurica	MUSDAU
	Atitlan Grebe	ATGR	Podilymbus gigas	PODGIG
+	Atlantic Brant	ATBR	Branta b. bernicla	BRABBE
	Atlantic Puffin	ATPU	Fratercula arctica	FRAARC
	Audubon's Oriole	AUOR	Icterus graduacauda	ICTGRA
	Audubon's Shearwater	AUSH	Puffinus lherminieri	PUFLHE
+	Audubon's Warbler	AUWA	Dendroica c. auduboni	DENCAU
	Aztec Thrush	AZTH	Ridgwayia pinicola	RIDPIN
	Azure Gallinule	AZGA	Porphyrio flavirostris	PORFLR*
	Azure-crowned Hummingbird	AZCH*	Amazilia cyanocephala	AMACYC*
	Azure-hooded Jay	AHJA	Cyanolyca cucullata	CYACUC
	Azure-rumped Tanager	ARTA	Tangara cabanisi	TANCAB
	Bachman's Sparrow	BACS*	Peucaea aestivalis	PEUAES
	Bachman's Warbler	BAWA	Vermivora bachmanii	VERBAC
	Bahama Mockingbird	BAMO	Mimus gundlachii	MIMGUN
	Bahama Oriole	BAHO	Icterus northropi	ICTNOR
	Bahama Swallow	BAHS*	Tachycineta cyaneoviridis	TACCYA
	Bahama Woodstar	BAWO	Calliphlox evelynae	CALEVE
	Bahama Yellowthroat	BAYE	Geothlypis rostrata	GEOROS
	Baikal Teal	BATE	Anas formosa	ANAFOR
	Baird's Sandpiper	BASA	Calidris bairdii	CALBAI
	Baird's Sparrow	BAIS*	Ammodramus bairdii	AMMBAI
	Baird's Trogon	BATR	Trogon bairdii	TROBAI
	Bald Eagle	BAEA	Haliaeetus leucocephalus	HALLEU
	Balsas Screech-Owl	BASO	Megascops seductus	MEGSED
	Baltimore Oriole	BAOR	Icterus galbula	ICTGAL
	Bananaquit	BANA	Coereba flaveola	COEFLA
	Band-backed Wren	BABW*	Campylorhynchus zonatus	CAMZON
	Band-rumped Storm-Petrel	BSTP*	Oceanodroma castro	OCECAS
	Band-rumped Swift	BRSW	Chaetura spinicaudus	CHASPI
	Band-tailed Barbthroat	BTBA	Threnetes ruckeri	THRRUC
	Band-tailed Pigeon	BTPI	Patagioenas fasciata	PATFAS
	Banded Quail	BAQU	Philortyx fasciatus	PHIFAS

	Banded Wren	BANW*	Thryothorus pleurostictus	THRPLE
	Bank Swallow	BANS*	Riparia riparia	RIPRIP
	Bar-tailed Godwit	BTGO	Limosa lapponica	LIMLAP
	Bar-winged Oriole	BWOR	Icterus maculialatus	ICTMAC
	Barbados Bullfinch	BABU	Loxigilla barbadensis	LOXBAD
	Barbuda Warbler	BARW*	Dendroica subita	DENSUB
	Bare-crowned Antbird	BACA*	Gymnocichla nudiceps	GYMNUD
	Bare-eyed Thrush	BEYT*	Turdus nudigenis	TURNUD
	Bare-legged Owl	BLOW	Gymnoglaux lawrencii	GYMLAW
	Bare-necked Umbrellabird	BNUM	Cephalopterus glabricollis	CEPGLA
	Bare-shanked Screech-Owl	BSSO	Megascops clarkii	MEGCLA
	Bare-throated Tiger-Heron	BTTH	Tigrisoma mexicanum	TIGMEX
	Barn Owl	BANO*	Tyto alba	TYTALB
	Barn Swallow	BARS*	Hirundo rustica	HIRRUS
	Barnacle Goose	BARG*	Branta leucopsis	BRALEU
	Barred Antshrike	BAAN	Thamnophilus doliatus	THADOL
	Barred Becard	BABE	Pachyramphus versicolor	PACVER
	Barred Forest-Falcon	BAFF	Micrastur ruficollis	MICRUF
	Barred Hawk	BAHA	Leucopternis princeps	LEUPRI
	Barred Owl	BADO*	Strix varia	STRVAR
	Barred Parakeet	BAPA	Bolborhynchus lineola	BOLLIN
	Barred Puffbird	BAPU	Nystalus radiatus	NYSRAD
	Barrow's Goldeneye	BAGO	Bucephala islandica	BUCISL
	Bat Falcon	BAFA	Falco rufigularis	FALRUF
	Bay Wren	BAYW*	Thryothorus nigricapillus	THRNIG
	Bay-breasted Cuckoo	BBRC*	Coccyzus rufigularis	COCRUF
	Bay-breasted Warbler	BBWA	Dendroica castanea	DENCAS
	Bay-headed Tanager	BHTA	Tangara gyrola	TANGYR
	Bearded Screech-Owl	BESO	Megascops barbarus	MEGBAR
	Bearded Wood-Partridge	BEWP	Dendrortyx barbatus	DENBAR
	Beautiful Hummingbird	BEAH*	Calothorax pulcher	CALPUL
	Beautiful Treerunner	BETR	Margarornis bellulus	MARBEL
	Bee Hummingbird	BEEH*	Mellisuga helenae	MELHEL
	Belcher's Gull	BEGU*	Larus belcheri	LARBEL
+	Belding's Savannah Sparrow	BSSP	Passerculus s. beldingi	PASSBE
	Belding's Yellowthroat	BEYE	Geothlypis beldingi	GEOBEL
	Bell's Vireo	BEVI	Vireo bellii	VIRBEL
	Belted Flycatcher	BEFL	Xenotriccus callizonus	XENCAL
	Belted Kingfisher	BEKI	Megaceryle alcyon	MEGALC
	Bendire's Thrasher	BETH	Toxostoma bendirei	TOXBEN
	Bermuda Petrel	BEPE	Pterodroma cahow	PTECAH
	Berylline Hummingbird	BEHU	Amazilia beryllina	AMABER
+	Bewick's Swan	BESW	Cygnus c. bewickii	CYGCBE
	Bewick's Wren	BEWR	Thryomanes bewickii	THRBEW
	Bicknell's Thrush	BITH	Catharus bicknelli	CATBIC
	Bicolored Antbird	BIAN	Gymnopithys leucaspis	GYMLEU
	Bicolored Hawk	BIHA	Accipiter bicolor	ACCBIC
	Bishop's Oo	BIOO	Moho bishopi	MOHBIS
	Black Antshrike	BLAN	Thamnophilus nigriceps	THANIG
+	Black Brant	BLBR	Branta b. nigricans	BRABNI
	Black Catbird	BLCA	Melanoptila glabrirostris	MELGLA
	Black Francolin	BLFR	Francolinus francolinus	FRAFRA
	Black Guan	BLAG*	Chamaepetes unicolor	CHAUNI
	Black Guillemot	BLGU	Cepphus grylle	CEPGRY
	Black Hawk-Eagle	BLHE	Spizaetus tyrannus	SPITYR
	Black Kite	BLAK*	Milvus migrans	MILMIG

Black Mamo	BLMA	Drepanis funerea	DREFUN
Black Noddy	BLNO	Anous minutus	ANOMIN
Black Oropendola	BLOR	Psarocolius guatimozinus	PSAGUA
Black Oystercatcher	BLOY	Haematopus bachmani	HAEBAC
Black Phoebe	BLPH	Sayornis nigricans	SAYNIG
Black Rail	BLRA	Laterallus jamaicensis	LATJAM
Black Rosy-Finch	BLRF	Leucosticte atrata	LEUATT*
Black Scoter	BLSC	Melanitta americana	MELAME
Black Skimmer	BLSK	Rynchops niger	RYNNIG
Black Storm-Petrel	BLSP	Oceanodroma melania	OCEMEL
Black Swift	BLSW	Cypseloides niger	CYPNIG
Black Tern	BLTE	Chlidonias niger	CHLNIG
Black Thrush	BLTH	Turdus infuscatus	TURINF
Black Turnstone	BLTU	Arenaria melanocephala	AREMEL
Black Vulture	BLVU	Coragyps atratus	CORATR
Black-and-white Becard	BAWB	Pachyramphus albogriseus	PACALB
Black-and-white Hawk-Eagle	BAWH	Spizaetus melanoleucus	SPIMEL
Black-and-white Owl	BLWO*	Ciccaba nigrolineata	CICNIG
Black-and-white Warbler	BAWW	Mniotilta varia	MNIVAR
Black-and-yellow Silky-flycatcher	BAYS	Phainoptila melanoxantha	PHAMEL
Black-and-yellow Tanager	BAYT	Chrysothlypis chrysomelas	CHRCHR
Black-backed Oriole	BBOR	Icterus abeillei	ICTABE
Black-backed Woodpecker	BBWO	Picoides arcticus	PICARC
Black-banded Woodcreeper	BBNW*	Dendrocolaptes picumnus	DENPIC
Black-bellied Hummingbird	BLBH*	Eupherusa nigriventris	EUPNIG
Black-bellied Plover	BBPL	Pluvialis squatarola	PLUSQU
Black-bellied Storm-Petrel	BBSP	Fregetta tropica	FRETRO
Black-bellied Whistling-Duck	BBWD	Dendrocygna autumnalis	DENAUT
Black-bellied Wren	BBEW*	Thryothorus fasciatoventris	THRFAS
Black-billed Cuckoo	BBCU	Coccyzus erythropthalmus	COCERY
Black-billed Flycatcher	BLBF*	Aphanotriccus audax	APHAUD
Black-billed Magpie	BBMA	Pica hudsonia	PICHUD
Black-billed Nightingale-Thrush	BBNT	Catharus gracilirostris	CATGRA
Black-billed Parrot	BBPA	Amazona agilis	AMAAGI
Black-breasted Puffbird	BBPU	Notharchus pectoralis	NOTPEC
Black-breasted Wood-Quail	BBWQ	Odontophorus leucolaemus	ODOLEU
Black-browed Albatross	BBAL	Thalassarche melanophris	THAMEL
Black-capped Chickadee	BCCH	Poecile atricapillus	POEATR
Black-capped Donacobius	BCDO	Donacobius atricapilla	DONATR
Black-capped Flycatcher	BCAF*	Empidonax atriceps	EMPATR
Black-capped Gnatcatcher	BCGN	Polioptila nigriceps	POLNIG
Black-capped Petrel	BCPE	Pterodroma hasitata	PTEHAS
Black-capped Pygmy-Tyrant	BPYT*	Myiornis atricapillus	MYIATP*
Black-capped Siskin	BCSI	Spinus atriceps	SPIATC*
Black-capped Swallow	BCSW	Notiochelidon pileata	NOTPIL
Black-capped Vireo	BCVI	Vireo atricapilla	VIRATR
Black-cheeked Ant-Tanager	BCAT	Habia atrimaxillaris	HABATR
Black-cheeked Warbler	BCWA	Basileuterus melanogenys	BASMEL
Black-cheeked Woodpecker	BCWO	Melanerpes pucherani	MELPUC
Black-chested Jay	BCHJ*	Cyanocorax affinis	CYAAFF
Black-chested Sparrow	BCHS*	Peucaea humeralis	PEUHUM
Black-chinned Hummingbird	BCHU	Archilochus alexandri	ARCALE
Black-chinned Sparrow	BCSP	Spizella atrogularis	SPIATG*
Black-collared Hawk	BCHA	Busarellus nigricollis	BUSNIG
Black-cowled Oriole	BCOR	Icterus prosthemelas	ICTPRO
Black-crested Coquette	BCCO	Lophornis helenae	LOPHEL

Black-crested Titmouse	BCTI	Baeolophus atricristatus	BAEATR
Black-crowned Antpitta	BCNA*	Pittasoma michleri	PITMIC
Black-crowned Night-Heron	BCNH	Nycticorax nycticorax	NYCNYC
Black-crowned Palm-Tanager	BPLT*	Phaenicophilus palmarum	PHAPAL
Black-crowned Tityra	BCRT*	Tityra inquisitor	TITINQ
Black-eared Wood-Quail	BEWQ	Odontophorus melanotis	ODOMEL
Black-faced Antthrush	BFAN	Formicarius analis	FORANA
Black-faced Grassquit	BFGR	Tiaris bicolor	TIABIC
Black-faced Grosbeak	BFAG*	Caryothraustes poliogaster	CARPOL
Black-faced Solitaire	BFSO	Myadestes melanops	MYAMEL
Black-footed Albatross	BFAL	Phoebastria nigripes	PHONIG
Black-headed Antthrush	BHEA*	Formicarius nigricapillus	FORNIG
Black-headed Grosbeak	BHGR	Pheucticus melanocephalus	PHEMEL
Black-headed Gull	BHGU	Chroicocephalus ridibundus	CHRRID
Black-headed Nightingale-Thrush	BHNT	Catharus mexicanus	CASMEX*
Black-headed Saltator	BHSA	Saltator atriceps	SALATR
Black-headed Siskin	BHSI	Spinus notatus	SPINOT
Black-headed Tody-Flycatcher	BHTF	Todirostrum nigriceps	TODNIG
Black-headed Trogon	BHTR	Trogon melanocephalus	TROMEC*
Black-hooded Antshrike	BHOA*	Thamnophilus bridgesi	THABRI
Black-legged Kittiwake	BLKI	Rissa tridactyla	RISTRI
Black-necked Stilt	BNST	Himantopus mexicanus	HIMMEX
Black-polled Yellowthroat	BPYE	Geothlypis speciosa	GEOSPE
Black-rumped Waxbill	BRUW*	Estrilda troglodytes	ESTTRO
Black-striped Sparrow	BSTS*	Arremonops conirostris	ARRCON
Black-striped Woodcreeper	BSWO	Xiphorhynchus lachrymosus	XIPLAC
Black-tailed Flycatcher	BTFL	Myiobius atricaudus	MYIATD*
Black-tailed Gnatcatcher	BTGN	Polioptila melanura	POLMEL
Black-tailed Godwit	BTGD*	Limosa limosa	LIMLIM
Black-tailed Gull	BTGU*	Larus crassirostris	LARCRA
Black-tailed Trogon	BTAT*	Trogon melanurus	TROMER*
Black-thighed Grosbeak	BTGG*	Pheucticus tibialis	PHETIB
Black-throated Blue Warbler	BTBW	Dendroica caerulescens	DENCAE
Black-throated Bobwhite	BTBO	Colinus nigrogularis	COLNIG
Black-throated Gray Warbler	BTYW*	Dendroica nigrescens	DENNIG
Black-throated Green Warbler	BTNW*	Dendroica virens	DENVIR
Black-throated Jay	BTJA	Cyanolyca pumilo	CYAPUM
Black-throated Magpie-Jay	BTMJ	Calocitta colliei	CALCOL
Black-throated Mango	BTMA	Anthracothorax nigricollis	ANTNIG
Black-throated Shrike-Tanager	BTST	Lanio aurantius	LANAUR
Black-throated Sparrow	BTSP	Amphispiza bilineata	AMPBIL
Black-throated Trogon	BTHT*	Trogon rufus	TRORUS*
Black-throated Wren	BTWR	Thryothorus atrogularis	THRATR
Black-tipped Cotinga	BTCO	Carpodectes hopkei	CARHOP
Black-vented Oriole	BVOR	Icterus wagleri	ICTWAG
Black-vented Shearwater	BVSH	Puffinus opisthomelas	PUFOPI
Black-whiskered Vireo	BWVI	Vireo altiloquus	VIRALT
Black-winged Petrel	BWPE	Pterodroma nigripennis	PTENIG
Black-winged Stilt	BWST	Himantopus himantopus	HIMHIM
Blackburnian Warbler	BLBW*	Dendroica fusca	DENFUS
Blackpoll Warbler	BLPW*	Dendroica striata	DENSTR
Blue Bunting	BLBU	Cyanocompsa parellina	CYAPAR
Blue Cotinga	BLCO	Cotinga nattererii	COTNAT
Blue Dacnis	BLDA	Dacnis cayana	DACCAY
Blue Grosbeak	BLGR	Passerina caerulea	PASCAE
Blue Ground-Dove	BLGD	Claravis pretiosa	CLAPRE

	Blue Jay	BLJA	Cyanocitta cristata	CYACRI
	Blue Mockingbird	BLMO	Melanotis caerulescens	MELCAE
	Blue Mountain Vireo	BMVI	Vireo osburni	VIROSB
	Blue Seedeater	BLSE	Amaurospiza concolor	AMSCON*
	Blue-and-gold Tanager	BAGT	Bangsia arcaei	BANARC
	Blue-and-white Mockingbird	BAWM	Melanotis hypoleucus	MELHYC*
	Blue-and-white Swallow	BAWS	Pygochelidon cyanoleuca	PYGCYA
	Blue-and-yellow Macaw	BAYM	Ara ararauna	ARAARA
	Blue-black Grassquit	BGRA*	Volatinia jacarina	VOLJAC
	Blue-black Grosbeak	BGRO*	Cyanocompsa cyanoides	CYACYD*
	Blue-capped Hummingbird	BCAH*	Eupherusa cyanophrys	EUPCYP*
	Blue-chested Hummingbird	BCHH*	Amazilia amabilis	AMAAMB*
	Blue-crowned Chlorophonia	BCRC*	Chlorophonia occipitalis	CHLOCC
	Blue-crowned Manakin	BCRM*	Pipra coronata	PIPCOR
	Blue-crowned Motmot	BCMO	Momotus momota	MOMMOM
	Blue-footed Booby	BFBO	Sula nebouxii	SULNEB
	Blue-fronted Parrotlet	BFPA	Touit dilectissimus	TOUDIL
	Blue-gray Gnatcatcher	BGGN	Polioptila caerulea	POLCAE
	Blue-gray Noddy	BGNO	Procelsterna cerulea	PROCER
	Blue-gray Tanager	BGTA	Thraupis episcopus	THREPI
	Blue-headed Hummingbird	BHHU	Cyanophaia bicolor	CYABIC
	Blue-headed Parrot	BHEP*	Pionus menstruus	PIOMEN
	Blue-headed Quail-Dove	BHQD	Starnoenas cyanocephala	STACYA
	Blue-headed Vireo	BHVI	Vireo solitarius	VIRSOL
	Blue-tailed Hummingbird	BTLH*	Amazilia cyanura	AMACYR*
	Blue-throated Goldentail	BTRG*	Hylocharis eliciae	HYLELI
	Blue-throated Hummingbird	BTHH*	Lampornis clemenciae	LAMCLE
	Blue-throated Motmot	BTMO	Aspatha gularis	ASPGUL
	Blue-winged Teal	BWTE	Anas discors	ANADIS
	Blue-winged Warbler	BWWA	Vermivora cyanoptera	VERCYA
	Bluethroat	BLUE	Luscinia svecica	LUSSVE
	Boat-billed Flycatcher	BOBF*	Megarynchus pitangua	MEGPIT
	Boat-billed Heron	BBHE	Cochlearius cochlearius	COCCOH*
	Boat-tailed Grackle	BTGR	Quiscalus major	QUIMAJ
	Bobolink	BOBO	Dolichonyx oryzivorus	DOLORY
	Bohemian Waxwing	BOWA	Bombycilla garrulus	BOMGAR
	Bonaparte's Gull	BOGU	Chroicocephalus philadelphia	CHRPHI
	Bonin Petrel	BOPE	Pterodroma hypoleuca	PTEHYP
	Boreal Chickadee	BOCH	Poecile hudsonicus	POEHUD
	Boreal Owl	BOOW	Aegolius funereus	AEGFUN
	Botteri's Sparrow	BOSP	Peucaea botterii	PEUBOT
	Boucard's Wren	BOWR	Campylorhynchus jocosus	CAMJOC
	Brace's Emerald	BREM	Chlorostilbon bracei	CHLBRA
	Brambling	BRAM	Fringilla montifringilla	FRIMON
	Bran-colored Flycatcher	BCOF*	Myiophobus fasciatus	MYIFAS
	Brandt's Cormorant	BRAC*	Phalacrocorax penicillatus	PHAPEN
	Brant	BRAN	Branta bernicla	BRABER
+	Brant Intergrade	BRIN	Branta b. bern. x nigri.	BRABBN
	Brewer's Blackbird	BRBL	Euphagus cyanocephalus	EUPCYC*
	Brewer's Sparrow	BRSP	Spizella breweri	SPIBRE
+	Brewster's Warbler	BRWA	Vermivora pinus x chrysopt.	VERPIC
	Bridled Quail-Dove	BRQD	Geotrygon mystacea	GEOMYS
	Bridled Sparrow	BRIS*	Peucaea mystacalis	PEUMYS
	Bridled Tern	BRTE	Onychoprion anaethetus	ONYANA
	Bridled Titmouse	BRTI	Baeolophus wollweberi	BAEWOL
	Bright-rumped Attila	BRAT	Attila spadiceus	ATTSPA

	Bristle-thighed Curlew	BTCU	Numenius tahitiensis	NUMTAH
	Broad-billed Hummingbird	BBIH*	Cynanthus latirostris	CYNLAT
	Broad-billed Motmot	BBMO	Electron platyrhynchum	ELEPLA
	Broad-billed Sandpiper	BBIS*	Limicola falcinellus	LIMFAL
	Broad-billed Tody	BBTO	Todus subulatus	TODSUB
	Broad-tailed Hummingbird	BTAH*	Selasphorus platycercus	SELPLA
	Broad-winged Hawk	BWHA	Buteo platypterus	BUTPLA
	Bronze Mannikin	BRMA	Lonchura cucullata	LONCUC
	Bronze-olive Pygmy-Tyrant	BOPT	Pseudotriccus pelzelni	PSEPEL
	Bronze-tailed Plumeleteer	BTPL	Chalybura urochrysia	CHAURO
	Bronzed Cowbird	BROC*	Molothrus aeneus	MOLAEN
	Bronzy Hermit	BRHE	Glaucis aeneus	GLAAEN
	Brown Booby	BRBO	Sula leucogaster	SULLEU
	Brown Creeper	BRCR	Certhia americana	CERAME
	Brown Hawk-Owl	BRHO	Ninox scutulata	NINSCU
	Brown Jay	BRJA	Psilorhinus morio	PSIMOR
	Brown Noddy	BRNO	Anous stolidus	ANOSTO
	Brown Pelican	BRPE	Pelecanus occidentalis	PELOCC
	Brown Shrike	BRSH	Lanius cristatus	LANCRI
	Brown Thrasher	BRTH	Toxostoma rufum	TOXRUF
	Brown Trembler	BRTR	Cinclocerthia ruficauda	CINRUF
	Brown Violetear	BRVI	Colibri delphinae	COLDEL
	Brown-backed Solitaire	BBSO	Myadestes occidentalis	MYAOCC
	Brown-billed Scythebill	BBSC	Campylorhamphus pusillus	CAMPUS
	Brown-capped Rosy-Finch	BCRF	Leucosticte australis	LEUAUS
	Brown-capped Tyrannulet	BCTY	Ornithion brunneicapillus	ORNBRU
	Brown-capped Vireo	BCAV*	Vireo leucophrys	VIRLEU
	Brown-chested Martin	BCMA	Progne tapera	PROTAP
	Brown-crested Flycatcher	BCFL	Myiarchus tyrannulus	MYITYR
	Brown-headed Cowbird	BHCO	Molothrus ater	MOLATE
	Brown-headed Nuthatch	BHNU	Sitta pusilla	SITPUS
	Brown-hooded Parrot	BHOP*	Pyrilia haematotis	PYRHAE
	Brown-throated Parakeet	BTPA	Aratinga pertinax	ARAPER
	Brownish Twistwing	BRTW	Cnipodectes subbrunneus	CNISUB
	Budgerigar	BUDG	Melopsittacus undulatus	MELUND
	Buff-bellied Hummingbird	BBEH*	Amazilia yucatanensis	AMAYUC
	Buff-breasted Flycatcher	BBFL	Empidonax fulvifrons	EMPFUL
	Buff-breasted Sandpiper	BBSA	Tryngites subruficollis	TRYSUB
	Buff-breasted Wren	BBRW*	Thryothorus leucotis	THRLET*
	Buff-collared Nightjar	BCNI	Caprimulgus ridgwayi	CAPRID
	Buff-fronted Foliage-gleaner	BFFG	Philydor rufum	PHIRUF
	Buff-fronted Quail-Dove	BFQD	Geotrygon costaricensis	GEOCOS
	Buff-necked Ibis	BNIB	Theristicus caudatus	THECAU
	Buff-rumped Warbler	BURW*	Phaeothlypis fulvicauda	PHAFUV*
	Buff-throated Foliage-gleaner	BTFG	Automolus ochrolaemus	AUTOCH
	Buff-throated Saltator	BTSA	Saltator maximus	SALMAX
	Bufflehead	BUFF	Bucephala albeola	BUCALB
	Buffy Tuftedcheek	BUTU	Pseudocolaptes lawrencii	PSELAW
	Buffy-crowned Wood-Partridge	BCWP	Dendrortyx leucophrys	DENLEU
	Buller's Shearwater	BULS*	Puffinus bulleri	PUFBUL
	Bullock's Oriole	BUOR	Icterus bullockii	ICTBUL
+	Bullock's x Baltimore Oriole Hybrid	BBOH	Icterus bullockii x galb.	ICTBUG
	Bulwer's Petrel	BUPE	Bulweria bulwerii	BULBUL
	Bumblebee Hummingbird	BUHU	Atthis heloisa	ATTHEL
	Burrowing Owl	BUOW	Athene cunicularia	ATHCUN
	Bushtit	BUSH	Psaltriparus minimus	PSAMIN

	Bushy-crested Jay	BCRJ*	Cyanocorax melanocyaneus	CYAMEL
	Cackling Goose	CACG*	Branta hutchinsii	BRAHUT
	Cactus Wren	CACW*	Campylorhynchus brunneicapillus	CAMBRU
	California Condor	CACO	Gymnogyps californianus	GYMCAL
	California Gnatcatcher	CAGN	Polioptila californica	POLCAL
	California Gull	CAGU	Larus californicus	LARCAL
	California Quail	CAQU	Callipepla californica	CALCAL
	California Thrasher	CATH	Toxostoma redivivum	TOXRED
	California Towhee	CALT*	Melozone crissalis	MELCRI
	Calliope Hummingbird	CAHU	Stellula calliope	STECAL
	Canada Goose	CANG*	Branta canadensis	BRACAN
	Canada Warbler	CAWA	Wilsonia canadensis	WILCAN
	Canivet's Emerald	CAEM	Chlorostilbon canivetii	CHLCAV*
	Canvasback	CANV	Aythya valisineria	AYTVAL
	Canyon Towhee	CANT*	Melozone fusca	MEZFUS*
	Canyon Wren	CANW*	Catherpes mexicanus	CAPMEX*
	Cape May Warbler	CMWA	Dendroica tigrina	DENTIG
+	Cape Sable Seaside-Sparrow	CSSS	Ammodramus m. mirabilis	AMMMMI
	Cape Verde Shearwater	CVSH	Calonectris edwardsii	CALEDW
	Capped Heron	CAHE	Pilherodius pileatus	PILPIL
	Carib Grackle	CAGR	Quiscalus lugubris	QUILUG
	Caribbean Coot	CARC*	Fulica caribaea	FULCAR
	Caribbean Dove	CADO	Leptotila jamaicensis	LEPJAM
	Caribbean Elaenia	CAEL	Elaenia martinica	ELAMAR
	Caribbean Martin	CAMA	Progne dominicensis	PRODOM
	Carmiol's Tanager	CATA	Chlorothraupis carmioli	CHLCAR
	Carolina Chickadee	CACH	Poecile carolinensis	POECAR
	Carolina Parakeet	CAPA	Conuropsis carolinensis	CONCAL*
	Carolina Wren	CARW*	Thryothorus ludovicianus	THRLUD
+	Carolina X Black-c. Chickadee Hybrid	CBCC*	Poecile caroli. x atrica.	POECAA
	Caspian Tern	CATE	Hydroprogne caspia	HYDCAS
	Cassin's Auklet	CAAU	Ptychoramphus aleuticus	PTYALE
	Cassin's Finch	CAFI	Carpodacus cassinii	CARCAS
	Cassin's Kingbird	CAKI	Tyrannus vociferans	TYRVOC
	Cassin's Sparrow	CASP	Peucaea cassinii	PEUCAS
	Cassin's Vireo	CAVI	Vireo cassinii	VIRCAS
	Cattle Egret	CAEG	Bubulcus ibis	BUBIBI
	Cattle Tyrant	CATY	Machetornis rixosa	MACRIX
	Cave Swallow	CASW	Petrochelidon fulva	PETFUL
	Cedar Waxwing	CEDW*	Bombycilla cedrorum	BOMCED
	Central American Pygmy-Owl	CAPO	Glaucidium griseiceps	GLAGRI
	Cerulean Warbler	CERW*	Dendroica cerulea	DENCER
	Chapman's Swift	CHAS*	Chaetura chapmani	CHACHA
	Charming Hummingbird	CHHU	Amazilia decora	AMADEC
	Checker-throated Antwren	CTAN	Epinecrophylla fulviventris	EPIFUL
	Cherrie's Tanager	CHET*	Ramphocelus costaricensis	RAMCOS
	Chestnut Munia	CHMU	Lonchura atricapilla	LONATR
	Chestnut-backed Antbird	CBAN	Myrmeciza exsul	MYREXS
	Chestnut-backed Chickadee	CBCH	Poecile rufescens	POERUF
	Chestnut-bellied Cuckoo	CBCU	Coccyzus pluvialis	COCPLU
	Chestnut-bellied Sandgrouse	CBSA	Pterocles exustus	PTEEXU
	Chestnut-capped Brush-Finch	CCBF	Arremon brunneinucha	ARRBRU
	Chestnut-collared Longspur	CCLO	Calcarius ornatus	CALORN
	Chestnut-collared Swift	CCSW	Streptoprocne rutila	STRRUT
	Chestnut-colored Woodpecker	CCOW*	Celeus castaneus	CELCAS
	Chestnut-fronted Macaw	CFMA	Ara severus	ARASEV

Chestnut-headed Oropendola	CHOR	Psarocolius wagleri	PSAWAG
Chestnut-mandibled Toucan	CMTO	Ramphastos swainsonii	RAMSWA
Chestnut-sided Shrike-Vireo	CSSV	Vireolanius melitophrys	VIRMEL
Chestnut-sided Warbler	CSWA	Dendroica pensylvanica	DENPEN
Chihuahuan Raven	CHRA	Corvus cryptoleucus	CORCRY
Chimney Swift	CHSW	Chaetura pelagica	CHAPEL
Chinese Egret	CHEG	Egretta eulophotes	EGREUL
Chinese Pond-Heron	CHPH	Ardeola bacchus	ARDBAC
Chipping Sparrow	CHSP	Spizella passerina	SPIPAS
Chiriqui Quail-Dove	CHQD	Geotrygon chiriquensis	GEOCHI
Choco Tapaculo	CHOT*	Scytalopus chocoensis	SCYCHO
Choco Tinamou	CHTI	Crypturellus kerriae	CRYKER
Christmas Shearwater	CHSH	Puffinus nativitatis	PUFNAT
Chuck-will's-widow	CWWI	Caprimulgus carolinensis	CAPCAR
Chukar	CHUK	Alectoris chukar	ALECHU
Cinereous Becard	CIRB*	Pachyramphus rufus	PACRUF
Cinnamon Becard	CIMB*	Pachyramphus cinnamomeus	PACCIN
Cinnamon Hummingbird	CIHU	Amazilia rutila	AMARUT
Cinnamon Teal	CITE	Anas cyanoptera	ANACYA
Cinnamon Woodpecker	CIWO	Celeus loricatus	CELLOR
Cinnamon-bellied Flowerpiercer	CBFL	Diglossa baritula	DIGBAR
Cinnamon-tailed Sparrow	CTSP	Peucaea sumichrasti	PEUSUM
Citreoline Trogon	CITR	Trogon citreolus	TROCIT
Citrine Wagtail	CIWA	Motacilla citreola	MOTCIT
Clapper Rail	CLRA	Rallus longirostris	RALLON
Clarion Wren	CLWR	Troglodytes tanneri	TROTAN
Clark's Grebe	CLGR	Aechmophorus clarkii	AECCLA
Clark's Nutcracker	CLNU	Nucifraga columbiana	NUCCOL
Clay-colored Sparrow	CCSP	Spizella pallida	SPIPAL
Clay-colored Thrush	CCTH	Turdus grayi	TURGRA
Cliff Swallow	CLSW	Petrochelidon pyrrhonota	PETPYR
Cocoa Thrush	COCT*	Turdus fumigatus	TURFUM
Cocoa Woodcreeper	COWO	Xiphorhynchus susurrans	XIPSUS
Cocoi Heron	COHE	Ardea cocoi	ARDCOC
Cocos Cuckoo	COCC*	Coccyzus ferrugineus	COCFER
Cocos Finch	COFI	Pinaroloxias inornata	PININO
Cocos Flycatcher	COCF*	Nesotriccus ridgwayi	NESRID
Colima Pygmy-Owl	CPYO*	Glaucidium palmarum	GLAPAL
Colima Warbler	COLW*	Oreothlypis crissalis	ORECRI
Collared Aracari	COAR	Pteroglossus torquatus	PTETOR
Collared Forest-Falcon	COFF	Micrastur semitorquatus	MICSEM
Collared Plover	COPL	Charadrius collaris	CHACOL
Collared Pratincole	COPR	Glareola pratincola	GLAPRA
Collared Redstart	COLR*	Myioborus torquatus	MYITOR
Collared Towhee	COTO	Pipilo ocai	PIPOCA
Collared Trogon	COTR	Trogon collaris	TROCOL
Colombian Crake	COLC*	Neocrex colombiana	NEOCOL
Comb Duck	CODU	Sarkidiornis melanotos	SARMEL
Common Black-Hawk	COBH	Buteogallus anthracinus	BUTANT
Common Bush-Tanager	COBT	Chlorospingus ophthalmicus	CHLOPH
Common Canary	COCA	Serinus canaria	SERCAN
Common Chaffinch	COCH	Fringilla coelebs	FRICOE
Common Crane	COMC*	Grus grus	GRUGRU
Common Cuckoo	COCU	Cuculus canorus	CUCCAN
Common Eider	COEI	Somateria mollissima	SOMMOL
Common Goldeneye	COGO	Bucephala clangula	BUCCLA

	Common Grackle	COGR	Quiscalus quiscula	QUIQUI
	Common Greenshank	COMG*	Tringa nebularia	TRINEB
	Common Ground-Dove	COGD	Columbina passerina	COLPAS
	Common House-Martin	COHM	Delichon urbicum	DELURB
	Common Loon	COLO	Gavia immer	GAVIMM
	Common Merganser	COME	Mergus merganser	MERMER
	Common Moorhen	COMO	Gallinula chloropus	GALCHL
	Common Murre	COMU	Uria aalge	URIAAL
	Common Myna	COMY	Acridotheres tristis	ACRTRI
	Common Nighthawk	CONI	Chordeiles minor	CHOMIN
	Common Pauraque	COPA	Nyctidromus albicollis	NYCALB
	Common Peafowl	CPEA*	Pavo cristatus	PAVCRI
	Common Pochard	CPOC*	Aythya ferina	AYTFER
	Common Poorwill	COPO	Phalaenoptilus nuttallii	PHANUT
	Common Potoo	CPOT*	Nyctibius griseus	NYCGRI
	Common Raven	CORA	Corvus corax	CORCOR
	Common Redpoll	CORE	Acanthis flammea	ACAFLA
	Common Redshank	COMR*	Tringa totanus	TRITOT
	Common Ringed Plover	CRPL	Charadrius hiaticula	CHAHIA
	Common Rosefinch	CORO	Carpodacus erythrinus	CARERY
	Common Sandpiper	COSA	Actitis hypoleucos	ACTHYP
	Common Snipe	COSN	Gallinago gallinago	GALGAN*
	Common Swift	COSW	Apus apus	APUAPU
	Common Tern	COTE	Sterna hirundo	STEHIR
	Common Tody-Flycatcher	COTF	Todirostrum cinereum	TODCIN
	Common Waxbill	COMW*	Estrilda astrild	ESTAST
	Common Yellowthroat	COYE	Geothlypis trichas	GEOTRI
+	Common/Hoary Redpoll	CHRE	Acanthis flamm./hornemanni	ACAFLH
	Connecticut Warbler	CONW*	Oporornis agilis	OPOAGI
	Cook's Petrel	COOP*	Pterodroma cookii	PTECOO
	Cooper's Hawk	COHA	Accipiter cooperii	ACCCOO
	Coppery-headed Emerald	CHEM	Elvira cupreiceps	ELVCUP
	Cordilleran Flycatcher	COFL	Empidonax occidentalis	EMPOCC
	Corn Crake	CORC*	Crex crex	CRECRE
	Cory's Shearwater	COSH	Calonectris diomedea	CALDIO
	Costa Rican Pygmy-Owl	CRPO	Glaucidium costaricanum	GLACOS
	Costa Rican Swift	CRSW	Chaetura fumosa	CHAFUM
	Costa's Hummingbird	COHU	Calypte costae	CALCOS
	Couch's Kingbird	COKI	Tyrannus couchii	TYRCOU
	Cozumel Emerald	COEM	Chlorostilbon forficatus	CHLFOR
	Cozumel Thrasher	COZT*	Toxostoma guttatum	TOXGUT
	Cozumel Vireo	COVI	Vireo bairdi	VIRBAI
	Crane Hawk	CRHA	Geranospiza caerulescens	GERCAE
	Craveri's Murrelet	CRMU	Synthliboramphus craveri	SYNCRA
	Crescent-chested Warbler	CCWA	Oreothlypis superciliosa	ORESUP
	Crested Auklet	CRAU	Aethia cristatella	AETCRI
	Crested Bobwhite	CRBO	Colinus cristatus	COLCRI
	Crested Caracara	CRCA	Caracara cheriway	CARCHE
	Crested Eagle	CREA	Morphnus guianensis	MORGUI
	Crested Guan	CRGU	Penelope purpurascens	PENPUR
	Crested Oropendola	CROR	Psarocolius decumanus	PSADEC
	Crested Owl	CROW	Lophostrix cristata	LOPCRI
	Crested Quail-Dove	CRQD	Geotrygon versicolor	GEOVES*
	Crimson-backed Tanager	CBTA	Ramphocelus dimidiatus	RAMDIM
	Crimson-bellied Woodpecker	CBWO	Campephilus haematogaster	CAMHAE
	Crimson-collared Grosbeak	CCGR	Rhodothraupis celaeno	RHOCEL

	Crimson-collared Tanager	CCTA	Ramphocelus sanguinolentus	RAMSAN
	Crimson-crested Woodpecker	CCRW*	Campephilus melanoleucos	CAMMEL
	Crimson-fronted Parakeet	CFPA	Aratinga finschi	ARAFIN
	Crissal Thrasher	CRTH	Toxostoma crissale	TOXCRI
	Crowned Slaty Flycatcher	CSFL	Empidonomus aurantioatrocristatus	EMPAUR
	Cuban Black-Hawk	CUBH	Buteogallus gundlachii	BUTGUN
	Cuban Blackbird	CUBL	Dives atroviolaceus	DIVATR
	Cuban Bullfinch	CUBU	Melopyrrha nigra	MELNIG
	Cuban Crow	CUCR	Corvus nasicus	CORNAS
	Cuban Emerald	CUEM	Chlorostilbon ricordii	CHLRIC
	Cuban Gnatcatcher	CUGN	Polioptila lembeyei	POLLEM
	Cuban Grassquit	CUGR	Tiaris canorus	TIACAN
	Cuban Green Woodpecker	CGWO	Xiphidiopicus percussus	XIPPER
	Cuban Macaw	CUBM*	Ara tricolor	ARATRI
	Cuban Martin	CUMA	Progne cryptoleuca	PROCRY
	Cuban Oriole	CUOR	Icterus melanopsis	ICTMEL
	Cuban Parakeet	CPAK*	Aratinga euops	ARAEUO
	Cuban Parrot	CPAT*	Amazona leucocephala	AMALEU
	Cuban Pewee	CUPE	Contopus caribaeus	CONCAB*
	Cuban Pygmy-Owl	CUPO	Glaucidium siju	GLASIJ
	Cuban Solitaire	CUSO	Myadestes elisabeth	MYAELI
	Cuban Tody	CUTO	Todus multicolor	TODMUL
	Cuban Trogon	CUTR	Priotelus temnurus	PRITEM
	Cuban Vireo	CUVI	Vireo gundlachii	VIRGUN
	Curlew Sandpiper	CUSA	Calidris ferruginea	CALFER
	Curve-billed Thrasher	CBTH	Toxostoma curvirostre	TOXCUR
	Dark Pewee	DAPE	Contopus lugubris	CONLUG
	Dark-billed Cuckoo	DBCU	Coccyzus melacoryphus	COCMEL
	Dark-eyed Junco	DEJU	Junco hyemalis	JUNHYE
	Dark-sided Flycatcher	DSFL	Muscicapa sibirica	MUSSIB
	Dickcissel	DICK	Spiza americana	SPIAME
	Dot-winged Antwren	DWAN	Microrhopias quixensis	MICQUI
	Double-banded Graytail	DBGR	Xenerpestes minlosi	XENMIL*
	Double-crested Cormorant	DCCO	Phalacrocorax auritus	PHAAUT*
	Double-striped Thick-knee	DSTK	Burhinus bistriatus	BURBIS
	Double-toothed Kite	DTKI	Harpagus bidentatus	HARBID
	Dovekie	DOVE	Alle alle	ALLALL
	Downy Woodpecker	DOWO	Picoides pubescens	PICPUB
	Dull-mantled Antbird	DMAN	Myrmeciza laemosticta	MYRLAE
	Dunlin	DUNL	Calidris alpina	CALALP
	Dusky Antbird	DUAN	Cercomacra tyrannina	CERTYR
	Dusky Flycatcher	DUFL	Empidonax oberholseri	EMPOBE
	Dusky Grouse	DUGR	Dendragapus obscurus	DENOBS
	Dusky Hummingbird	DUHU	Cynanthus sordidus	CYNSOR
	Dusky Nightjar	DUNI	Caprimulgus saturatus	CAPSAT
+	Dusky Seaside-Sparrow	DUSS	Ammodramus m. nigrescens	AMMMNI
	Dusky Thrush	DUTH	Turdus naumanni	TURNAU
	Dusky Warbler	DUWA	Phylloscopus fuscatus	PHYFUS
	Dusky-backed Jacamar	DBJA	Brachygalba salmoni	BRASAL
	Dusky-capped Flycatcher	DCFL	Myiarchus tuberculifer	MYITUB
	Dusky-faced Tanager	DFTA	Mitrospingus cassinii	MITCAS
	Dwarf Jay	DWJA	Cyanolyca nana	CYANAN
	Dwarf Vireo	DWVI	Vireo nelsoni	VIRNEL
	Eared Dove	EADO	Zenaida auriculata	ZENAUC*
	Eared Grebe	EAGR	Podiceps nigricollis	PODNIG
	Eared Poorwill	EAPO	Nyctiphrynus mcleodii	NYCMCL

	Eared Quetzal	EAQU	Euptilotis neoxenus	EUPNEO
	Eastern Bluebird	EABL	Sialia sialis	SIASIA
	Eastern Chat-Tanager	EACT	Calyptophilus frugivorus	CALFRU
	Eastern Kingbird	EAKI	Tyrannus tyrannus	TYRTYR
	Eastern Meadowlark	EAME	Sturnella magna	STUMAG
	Eastern Phoebe	EAPH	Sayornis phoebe	SAYPHO
	Eastern Screech-Owl	EASO	Megascops asio	MEGASI
	Eastern Spot-billed Duck	ESPD	Anas zonorhyncha	ANAZON
	Eastern Towhee	EATO	Pipilo erythrophthalmus	PIPERP*
	Eastern Whip-poor-will	EWPW	Caprimulgus vociferus	CAPVOC
+	Eastern White-crowned Sparrow	EWCS	Zonotrichia l. leucophrys	ZONLLE
	Eastern Wood-Pewee	EAWP	Contopus virens	CONVIR
	Eastern Yellow Wagtail	EYWA*	Motacilla tschutschensis	MOTTSC
	Elegant Euphonia	ELEU	Euphonia elegantissima	EUPELE
	Elegant Quail	ELQU	Callipepla douglasii	CALDOU
	Elegant Tern	ELTE	Thalasseus elegans	THAELE
	Elegant Trogon	ELTR	Trogon elegans	TROELE
	Elf Owl	ELOW	Micrathene whitneyi	MICWHI
	Elfin-woods Warbler	EWWA	Dendroica angelae	DENANG
	Emerald Tanager	EMTA	Tangara florida	TANFLO
	Emerald Toucanet	EMTO	Aulacorhynchus prasinus	AULPRA
	Emerald-chinned Hummingbird	ECHU	Abeillia abeillei	ABEABE
	Emperor Goose	EMGO	Chen canagica	CHECAN
	Erckel's Francolin	ERFR	Francolinus erckelii	FRAERC
	Eskimo Curlew	ESCU	Numenius borealis	NUMBOR
	Euler's Flycatcher	EUFL	Lathrotriccus euleri	LATEUL
	Eurasian Blackbird	EUBL	Turdus merula	TURMER
	Eurasian Bullfinch	EUBU	Pyrrhula pyrrhula	PYRPYH*
	Eurasian Collared-Dove	EUCD	Streptopelia decaocto	STRDEC
	Eurasian Coot	EUCO	Fulica atra	FULATR
	Eurasian Curlew	EUCU	Numenius arquata	NUMARQ
	Eurasian Dotterel	EUDO	Charadrius morinellus	CHAMOR
+	Eurasian Green-winged Teal	EGWT	Anas c. crecca	ANACCR
	Eurasian Hobby	EHOB*	Falco subbuteo	FALSUB
	Eurasian Hoopoe	EHOO*	Upupa epops	UPUEPO
	Eurasian Jackdaw	EUJA	Corvus monedula	CORMON
	Eurasian Kestrel	EUKE	Falco tinnunculus	FALTIN
	Eurasian Oystercatcher	EUOY	Haematopus ostralegus	HAEOST
	Eurasian Siskin	EUSI	Spinus spinus	SPISPI
	Eurasian Spoonbill	EURS*	Platalea leucorodia	PLALEU
	Eurasian Tree Sparrow	ETSP	Passer montanus	PASMON
	Eurasian Wigeon	EUWI	Anas penelope	ANAPEN
	Eurasian Woodcock	EUWO	Scolopax rusticola	SCORUS
	Eurasian Wryneck	EUWR	Jynx torquilla	JYNTOR
	European Golden-Plover	EUGP	Pluvialis apricaria	PLUAPR
	European Goldfinch	EUGO	Carduelis carduelis	CARCAU*
	European Starling	EUST	Sturnus vulgaris	STUVUL
	European Storm-Petrel	EUSP	Hydrobates pelagicus	HYDPEL
	European Turtle-Dove	EUTD	Streptopelia turtur	STRTUR
	Evening Grosbeak	EVGR	Coccothraustes vespertinus	COCVES
	Eye-ringed Flatbill	ERFL	Rhynchocyclus brevirostris	RHYBRE
	Eyebrowed Thrush	EYTH	Turdus obscurus	TUROBC*
	Falcated Duck	FADU	Anas falcata	ANAFAL
	Fan-tailed Warbler	FTWA	Euthlypis lachrymosa	EUTLAC
	Far Eastern Curlew	FECU	Numenius madagascariensis	NUMMAD
	Fasciated Antshrike	FAAN	Cymbilaimus lineatus	CYMLIN

	Fasciated Tiger-Heron	FTHE	Tigrisoma fasciatum	TIGFAS
	Fernandina's Flicker	FEFL	Colaptes fernandinae	COLFER
	Ferruginous Hawk	FEHA	Buteo regalis	BUTREG
	Ferruginous Pygmy-Owl	FEPO	Glaucidium brasilianum	GLABRA
	Field Sparrow	FISP	Spizella pusilla	SPIPUS
	Fieldfare	FIEL	Turdus pilaris	TURPIL
	Fiery-billed Aracari	FBAR	Pteroglossus frantzii	PTEFRA
	Fiery-throated Hummingbird	FTHU	Panterpe insignis	PANINS
	Fish Crow	FICR	Corvus ossifragus	COROSS
	Five-striped Sparrow	FSSP	Amphispiza quinquestriata	AMPQUI
	Flame-colored Tanager	FCTA	Piranga bidentata	PIRBID
	Flame-rumped Tanager	FRTA	Ramphocelus flammigerus	RAMFLA
	Flame-throated Warbler	FTHW*	Oreothlypis gutturalis	OREGUT
	Flammulated Flycatcher	FLFL	Deltarhynchus flammulatus	DELFLA
	Flammulated Owl	FLOW	Otus flammeolus	OTUFLA
	Flat-billed Vireo	FBVI	Vireo nanus	VIRNAN
	Flesh-footed Shearwater	FFSH	Puffinus carneipes	PUFCAR
+	Florida Grasshopper Sparrow	FGSP	Ammodramus s. floridanus	AMMSFL
	Florida Scrub-Jay	FLSJ	Aphelocoma coerulescens	APHCOE
	Forest Elaenia	FOEL	Myiopagis gaimardii	MYIGAI
	Forest Thrush	FOTH	Turdus lherminieri	TURLHE
	Fork-tailed Flycatcher	FTFL	Tyrannus savana	TYRSAV
	Fork-tailed Storm-Petrel	FTSP	Oceanodroma furcata	OCEFUR
	Fork-tailed Swift	FTSW	Apus pacificus	APUPAC
	Forster's Tern	FOTE	Sterna forsteri	STEFOR
	Fox Sparrow	FOSP	Passerella iliaca	PASILI
	Franklin's Gull	FRGU	Leucophaeus pipixcan	LEUPIP
	Fulvous Owl	FUOW	Strix fulvescens	STRFUL
	Fulvous Whistling-Duck	FUWD	Dendrocygna bicolor	DENBIC
	Fulvous-vented Euphonia	FVEU	Euphonia fulvicrissa	EUPFUL
	Gadwall	GADW	Anas strepera	ANASTR
	Galapagos Petrel	GAPE	Pterodroma phaeopygia	PTEPHA
	Gambel's Quail	GAQU	Callipepla gambelii	CALGAM
+	Gambel's White-crowned Sparrow	GWCS	Zonotrichia l. gambelii	ZONLGA
	Garden Emerald	GAEM	Chlorostilbon assimilis	CHLASS
	Garganey	GARG	Anas querquedula	ANAQUE
	Garnet-throated Hummingbird	GATH*	Lamprolaima rhami	LAMRHA
	Gartered Trogon	GATR	Trogon caligatus	TROCAL
	Giant Cowbird	GICO	Molothrus oryzivorus	MOLORY
	Giant Kingbird	GIKI	Tyrannus cubensis	TYRCUB
	Giant Wren	GIWR	Campylorhynchus chiapensis	CAMCHI
	Gila Woodpecker	GIWO	Melanerpes uropygialis	MELURO
	Gilded Flicker	GIFL	Colaptes chrysoides	COLCHR
	Glaucous Gull	GLGU	Larus hyperboreus	LARHYP
	Glaucous-winged Gull	GWGU	Larus glaucescens	LARGLS*
	Glossy Ibis	GLIB	Plegadis falcinellus	PLEFAL
	Glow-throated Hummingbird	GLTH*	Selasphorus ardens	SELARD
	Golden Eagle	GOEA	Aquila chrysaetos	AQUCHR
	Golden Swallow	GOSW	Tachycineta euchrysea	TACEUC
	Golden Vireo	GOVI	Vireo hypochryseus	VIRHYP
	Golden-bellied Flycatcher	GBFL	Myiodynastes hemichrysus	MYIHEM
	Golden-browed Chlorophonia	GBCH	Chlorophonia callophrys	CHLCAL
	Golden-browed Warbler	GBWA	Basileuterus belli	BASBEL
	Golden-cheeked Warbler	GCWA	Dendroica chrysoparia	DENCHR
	Golden-cheeked Woodpecker	GCHW*	Melanerpes chrysogenys	MELCHG*
	Golden-collared Manakin	GCMA	Manacus vitellinus	MANVIT

	Golden-crowned Emerald	GCEM	Chlorostilbon auriceps	CHLAUR
	Golden-crowned Flycatcher	GOCF*	Myiodynastes chrysocephalus	MYICHR
	Golden-crowned Kinglet	GCKI	Regulus satrapa	REGSAT
	Golden-crowned Spadebill	GCRS*	Platyrinchus coronatus	PLACOR
	Golden-crowned Sparrow	GCSP	Zonotrichia atricapilla	ZONATR
	Golden-crowned Warbler	GCRW*	Basileuterus culicivorus	BASCUL
	Golden-fronted Greenlet	GFGR	Hylophilus aurantiifrons	HYLAUR
	Golden-fronted Woodpecker	GFWO	Melanerpes aurifrons	MELAUR
	Golden-green Woodpecker	GGWO	Piculus chrysochloros	PICCHR
	Golden-headed Manakin	GHMA	Pipra erythrocephala	PIPERC*
	Golden-headed Quetzal	GHQU	Pharomachrus auriceps	PHAAUC*
	Golden-hooded Tanager	GHOT*	Tangara larvata	TANLAR
	Golden-naped Woodpecker	GNWO	Melanerpes chrysauchen	MELCHC*
	Golden-olive Woodpecker	GOWO	Colaptes rubiginosus	COLRUB
	Golden-winged Warbler	GWWA	Vermivora chrysoptera	VERCHR
	Grace's Warbler	GRWA	Dendroica graciae	DENGRA
	Grand Cayman Thrush	GCAT*	Turdus ravidus	TURRAV
	Grasshopper Sparrow	GRSP	Ammodramus savannarum	AMMSAV
	Grassland Yellow-Finch	GRYF	Sicalis luteola	SICLUT
	Gray Bunting	GRBU	Emberiza variabilis	EMBVAR
	Gray Catbird	GRCA	Dumetella carolinensis	DUMCAR
	Gray Elaenia	GRAE*	Myiopagis caniceps	MYICAN
	Gray Flycatcher	GRFL	Empidonax wrightii	EMPWRI
	Gray Francolin	GRAF*	Francolinus pondicerianus	FRAPON
	Gray Frog-Hawk	GRFH	Accipiter soloensis	ACCSOL
	Gray Gull	GRGU	Leucophaeus modestus	LEUMOD
	Gray Hawk	GRHA	Buteo nitidus	BUTNIT
	Gray Heron	GRAH*	Ardea cinerea	ARDCIN
	Gray Jay	GRAJ*	Perisoreus canadensis	PERCAN
	Gray Kingbird	GRAK*	Tyrannus dominicensis	TYRDOM
	Gray Nightjar	GRNI	Caprimulgus indicus	CAPIND
	Gray Partridge	GRAP*	Perdix perdix	PERPER
	Gray Silky-flycatcher	GRSF	Ptilogonys cinereus	PTICIN
	Gray Thrasher	GRAT*	Toxostoma cinereum	TOXCIN
	Gray Trembler	GRTR	Cinclocerthia gutturalis	CINGUT
	Gray Vireo	GRVI	Vireo vicinior	VIRVIC
	Gray Wagtail	GRAW*	Motacilla cinerea	MOTCIN
	Gray-and-gold Tanager	GAGT	Tangara palmeri	TANPAL
	Gray-backed Tern	GBAT*	Onychoprion lunatus	ONYLUN
	Gray-barred Wren	GBWR	Campylorhynchus megalopterus	CAMMEG
	Gray-breasted Crake	GBCR	Laterallus exilis	LATEXI
	Gray-breasted Martin	GYBM*	Progne chalybea	PROCHA
	Gray-breasted Wood-Wren	GBWW	Henicorhina leucophrys	HENLEP*
	Gray-breasted Woodpecker	GBWO	Melanerpes hypopolius	MELHYI*
	Gray-capped Flycatcher	GCAF*	Myiozetetes granadensis	MYIGRA
	Gray-cheeked Nunlet	GCNU	Nonnula frontalis	NONFRO
	Gray-cheeked Thrush	GCTH	Catharus minimus	CATMIN
+	Gray-cheeked/Bicknell's Thrush	GCBT	Catharus minimus x bickn.	CATMIB
	Gray-chested Dove	GCDO	Leptotila cassini	LEPCAS
	Gray-collared Becard	GCBE	Pachyramphus major	PACMAJ
	Gray-crowned Palm-Tanager	GCPT	Phaenicophilus poliocephalus	PHAPOL
	Gray-crowned Rosy-Finch	GCRF	Leucosticte tephrocotis	LEUTEP
	Gray-crowned Woodpecker	GYCW*	Colaptes auricularis	COLAUC*
	Gray-crowned Yellowthroat	GCYE	Geothlypis poliocephala	GEOPOL
	Gray-fronted Quail-Dove	GFQD	Geotrygon caniceps	GEOCAN
	Gray-headed Chachalaca	GHEC*	Ortalis cinereiceps	ORTCIN

	Gray-headed Chickadee	GHCH	Poecile cinctus	POECIN
	Gray-headed Dove	GHDO	Leptotila plumbeiceps	LEPPLU
+	Gray-headed Junco	GHJU	Junco h. caniceps	JUNNCA
	Gray-headed Kite	GHKI	Leptodon cayanensis	LEPCAY
	Gray-headed Piprites	GHPI	Piprites griseiceps	PIPGRI
	Gray-headed Tanager	GHET*	Eucometis penicillata	EUCPEN
	Gray-hooded Gull	GHGU	Chroicocephalus cirrocephalus	CHRCIR
	Gray-necked Wood-Rail	GNWR	Aramides cajanea	ARACAJ
	Gray-rumped Swift	GRSW	Chaetura cinereiventris	CHACIN
	Gray-streaked Flycatcher	GSFL	Muscicapa griseisticta	MUSGRI
	Gray-tailed Tattler	GTTA	Tringa brevipes	TRIBRE
	Gray-throated Chat	GTCH	Granatellus sallaei	GRASAL
	Gray-throated Leaftosser	GTLE	Sclerurus albigularis	SCLALB
	Grayish Saltator	GRAS*	Saltator coerulescens	SALCOE
	Graylag Goose	GRGO	Anser anser	ANSANS
	Great Antshrike	GANT*	Taraba major	TARMAJ
	Great Auk	GRAU	Pinguinus impennis	PINIMP
	Great Black-Hawk	GRBH	Buteogallus urubitinga	BUTURU
	Great Black-backed Gull	GBBG	Larus marinus	LARMAR
	Great Blue Heron	GBHE	Ardea herodias	ARDHER
	Great Cormorant	GRCO	Phalacrocorax carbo	PHACAR
	Great Crested Flycatcher	GCFL	Myiarchus crinitus	MYICRI
	Great Crested Tern	GCTE	Thalasseus bergii	THABER
	Great Curassow	GRCU	Crax rubra	CRARUB
	Great Egret	GREG	Ardea alba	ARDALB
	Great Frigatebird	GREF*	Fregata minor	FREMIN
	Great Gray Owl	GGOW	Strix nebulosa	STRNEB
	Great Green Macaw	GGMA	Ara ambiguus	ARAAMB
	Great Horned Owl	GHOW	Bubo virginianus	BUBVIR
	Great Jacamar	GJAC*	Jacamerops aureus	JACAUR
	Great Kiskadee	GKIS*	Pitangus sulphuratus	PITSUL
	Great Knot	GRKN	Calidris tenuirostris	CALTEN
	Great Lizard-Cuckoo	GRLC	Coccyzus merlini	COCMER
	Great Potoo	GRPO	Nyctibius grandis	NYCGRA
	Great Shearwater	GRSH	Puffinus gravis	PUFGRA
	Great Skua	GRSK	Stercorarius skua	STESKU
	Great Spotted Woodpecker	GSWO	Dendrocopos major	DENMAJ
	Great Swallow-tailed Swift	GSTS	Panyptila sanctihieronymi	PANSAN
	Great Tinamou	GRTI	Tinamus major	TINMAJ
+	Great White Heron	GWHE	Ardea h. occidentalis	ARDHOC
	Great-tailed Grackle	GTGR	Quiscalus mexicanus	QUIMEX
	Great-winged Petrel	GWPE	Pterodroma macroptera	PTEMAC
	Greater Akialoa	GAKI*	Hemignathus ellisianus	HEMELL
	Greater Amakihi	GRAM	Hemignathus sagittirostris	HEMSAG
	Greater Ani	GRTA*	Crotophaga major	CROMAJ
	Greater Antillean Bullfinch	GABU	Loxigilla violacea	LOXVIO
	Greater Antillean Elaenia	GAEL	Elaenia fallax	ELAFAL
	Greater Antillean Grackle	GAGR	Quiscalus niger	QUINIG
	Greater Antillean Nightjar	GANI	Caprimulgus cubanensis	CAPCUB
	Greater Koa-Finch	GRKF	Rhodacanthis palmeri	RHOPAL
	Greater Necklaced Laughingthrush	GNLA	Garrulax pectoralis	GARPEC
	Greater Pewee	GRPE	Contopus pertinax	CONPER
	Greater Prairie-Chicken	GRPC	Tympanuchus cupido	TYMCUP
	Greater Roadrunner	GRRO	Geococcyx californianus	GEOCAL
	Greater Sage-Grouse	GRSG	Centrocercus urophasianus	CENURO
	Greater Sand-Plover	GSAP*	Charadrius leschenaultii	CHALES

	Greater Scaup	GRSC	Aythya marila	AYTMAR
+	Greater Snow Goose Blue-morph	GSGB	Chen c. atlantica	CHECAT
+	Greater Snow Goose Intermediate-morph	GSGI	Chen c. atlantica	CHECAT
+	Greater Snow Goose White-morph	GSGW	Chen c. atlantica	CHECAT
	Greater White-fronted Goose	GWFG	Anser albifrons	ANSALB
	Greater Yellowlegs	GRYE	Tringa melanoleuca	TRIMEL
	Green Hermit	GREH*	Phaethornis guy	PHAGUY
	Green Heron	GRHE	Butorides virescens	BUTVIR
	Green Honeycreeper	GRHO	Chlorophanes spiza	CHLSPI
	Green Ibis	GRIB	Mesembrinibis cayennensis	MESCAY
	Green Jay	GREJ*	Cyanocorax yncas	CYAYNC
	Green Kingfisher	GKIN*	Chloroceryle americana	CHLAME
	Green Manakin	GMAK*	Chloropipo holochlora	CHLHOL
	Green Mango	GMAG*	Anthracothorax viridis	ANTVIR
	Green Parakeet	GREP*	Aratinga holochlora	ARAHOL
	Green Sandpiper	GRSA	Tringa ochropus	TRIOCH
	Green Shrike-Vireo	GRSV	Vireolanius pulchellus	VIRPUL
	Green Thorntail	GRET*	Discosura conversii	DISCON
	Green Violetear	GREV*	Colibri thalassinus	COLTHA
	Green-and-rufous Kingfisher	GARK	Chloroceryle inda	CHLIND
	Green-backed Sparrow	GBSP	Arremonops chloronotus	ARRCHL
	Green-breasted Mango	GNBM*	Anthracothorax prevostii	ANTPRE
	Green-breasted Mountain-gem	GBMG	Lampornis sybillae	LAMSYB
	Green-crowned Brilliant	GCBR	Heliodoxa jacula	HELJAC
	Green-crowned Woodnymph	GNCW*	Thalurania fannyi	THAFAN
	Green-fronted Hummingbird	GFHU	Amazilia viridifrons	AMAVIF*
	Green-fronted Lancebill	GFRL*	Doryfera ludovicae	DORLUD
	Green-naped Tanager	GNTA	Tangara fucosa	TANFUC
	Green-rumped Parrotlet	GRUP*	Forpus passerinus	FORPAS
	Green-striped Brush-Finch	GSBF	Arremon virenticeps	ARRVIR
	Green-tailed Towhee	GTTO	Pipilo chlorurus	PIPCHL
	Green-tailed Warbler	GTWA	Microligea palustris	MICPAL
	Green-throated Carib	GTCA	Eulampis holosericeus	EULHOL
	Green-throated Mountain-gem	GTMG	Lampornis viridipallens	LAMVIR
	Green-winged Teal	GWTE	Anas crecca	ANACRE
	Greenish Elaenia	GREL	Myiopagis viridicata	MYIVIR
	Greenish Puffleg	GRPU	Haplophaedia aureliae	HAPAUR
	Grenada Dove	GRDO	Leptotila wellsi	LEPWEL
	Grenada Flycatcher	GFLY*	Myiarchus nugator	MYINUG
	Groove-billed Ani	GBAN	Crotophaga sulcirostris	CROSUL
	Guadalupe Caracara	GUCA	Caracara lutosa	CARLUT
	Guadalupe Storm-Petrel	GUSP	Oceanodroma macrodactyla	OCEMAC
	Guadeloupe Woodpecker	GUWO	Melanerpes herminieri	MELHER
	Gull-billed Tern	GBTE	Gelochelidon nilotica	GELNIL
	Gundlach's Hawk	GUHA	Accipiter gundlachi	ACCGUN
	Gunnison Sage-Grouse	GUSG	Centrocercus minimus	CENMIN
	Gyrfalcon	GYRF	Falco rusticolus	FALRUS
	Hairy Woodpecker	HAWO	Picoides villosus	PICVIL
	Hammond's Flycatcher	HAFL	Empidonax hammondii	EMPHAM
+	Hammond's/Dusky Flycatcher	HDFL	Empidonax hammondii/oberho.	EMPHAO
	Happy Wren	HAWR	Thryothorus felix	THRFEL
+	Harlan's Hawk	HALH*	Buteo j. harlani	BUTJHA
	Harlequin Duck	HADU	Histrionicus histrionicus	HISHIS
	Harpy Eagle	HAEA	Harpia harpyja	HARHAR
	Harris's Hawk	HASH*	Parabuteo unicinctus	PARUNI
	Harris's Sparrow	HASP	Zonotrichia querula	ZONQUE

	Hawaii Amakihi	HAAM	Hemignathus virens	HEMVIR
	Hawaii Creeper	HCRE*	Oreomystis mana	OREMAN
	Hawaii Elepaio	HAEL	Chasiempis sandwichensis	CHASAN
	Hawaii Mamo	HAMA	Drepanis pacifica	DREPAC
	Hawaii Oo	HAOO	Moho nobilis	MOHNOB
	Hawaiian Coot	HACO	Fulica alai	FULALA
	Hawaiian Crow	HCRO*	Corvus hawaiiensis	CORHAW
	Hawaiian Duck	HAWD*	Anas wyvilliana	ANAWYV
	Hawaiian Goose	HAGO	Branta sandvicensis	BRASAN
	Hawaiian Hawk	HAWH*	Buteo solitarius	BUTSOL
+	Hawaiian Moorhen	HAMO	Gallinula c. sandvicensis	GALCSA
	Hawaiian Petrel	HAPE	Pterodroma sandwichensis	PTESAN
	Hawaiian Rail	HARA	Porzana sandwichensis	PORSAN
+	Hawaiian Stilt	HAST	Himantopus m. melanurus	HIMMME
	Hawfinch	HAWF	Coccothraustes coccothraustes	COCCOT*
	Heermann's Gull	HEEG*	Larus heermanni	LARHEE
	Helmeted Guineafowl	HELG*	Numida meleagris	NUMMEL
	Henslow's Sparrow	HESP	Ammodramus henslowii	AMMHEN
	Hepatic Tanager	HETA	Piranga flava	PIRFLA
	Herald Petrel	HEPE	Pterodroma arminjoniana	PTEARM
	Hermit Thrush	HETH	Catharus guttatus	CATGUT
	Hermit Warbler	HEWA	Dendroica occidentalis	DENOCC
	Herring Gull	HERG*	Larus argentatus	LARARG
	Highland Guan	HIGU	Penelopina nigra	PENNIG
	Highland Tinamou	HITI	Nothocercus bonapartei	NOTBON
	Hill Myna	HIMY	Gracula religiosa	GRAREL
	Himalayan Snowcock	HISN	Tetraogallus himalayensis	TETHIM
	Hispaniolan Crossbill	HICR	Loxia megaplaga	LOXMEG
	Hispaniolan Emerald	HIEM	Chlorostilbon swainsonii	CHLSWA
	Hispaniolan Lizard-Cuckoo	HILC	Coccyzus longirostris	COCLON
	Hispaniolan Oriole	HIOR	Icterus dominicensis	ICTDOM
	Hispaniolan Parakeet	HPAK*	Aratinga chloroptera	ARACHA*
	Hispaniolan Parrot	HPAT*	Amazona ventralis	AMAVEN
	Hispaniolan Pewee	HIPE	Contopus hispaniolensis	CONHIS
	Hispaniolan Spindalis	HISP	Spindalis dominicensis	SPDDOM*
	Hispaniolan Trogon	HITR	Priotelus roseigaster	PRIROS
	Hispaniolan Woodpecker	HIWO	Melanerpes striatus	MELSTR
	Hoary Redpoll	HORE	Acanthis hornemanni	ACAHOR
	Hoffmann's Woodpecker	HOWO	Melanerpes hoffmannii	MELHOF
	Honduran Emerald	HOEM	Amazilia luciae	AMALUC
	Hooded Grosbeak	HOOG*	Coccothraustes abeillei	COCABE
	Hooded Merganser	HOME	Lophodytes cucullatus	LOPCUC
	Hooded Oriole	HOOR	Icterus cucullatus	ICTCUC
	Hooded Warbler	HOWA	Wilsonia citrina	WILCIT
	Hooded Yellowthroat	HOYE	Geothlypis nelsoni	GEONEL
	Hook-billed Kite	HBKI	Chondrohierax uncinatus	CHOUNC
	Horned Grebe	HOGR	Podiceps auritus	PODAUR
	Horned Guan	HOGU	Oreophasis derbianus	OREDER
	Horned Lark	HOLA	Eremophila alpestris	EREALP
	Horned Puffin	HOPU	Fratercula corniculata	FRACOR
	House Finch	HOFI	Carpodacus mexicanus	CARMEX
	House Sparrow	HOSP	Passer domesticus	PASDOM
	House Wren	HOWR	Troglodytes aedon	TROAED
	Hudsonian Godwit	HUGO	Limosa haemastica	LIMHAE
	Humboldt's Sapphire	HUSA*	Hylocharis humboldtii	HYLHUM
	Hutton's Vireo	HUVI	Vireo huttoni	VIRHUT

	Hwamei	HWAM	Garrulax canorus	GARCAN
	Iceland Gull	ICGU	Larus glaucoides	LARGLD*
	Iiwi	IIWI	Vestiaria coccinea	VESCOC
	Immaculate Antbird	IMAN	Myrmeciza immaculata	MYRIMM
	Imperial Parrot	IMPA	Amazona imperialis	AMAIMP
	Imperial Woodpecker	IMWO	Campephilus imperialis	CAMIMP
	Inca Dove	INDO	Columbina inca	COLINC
	Inca Tern	INTE	Larosterna inca	LARINC
	Indian Silverbill	INSI	Lonchura malabarica	LONMAB*
	Indigo Bunting	INBU	Passerina cyanea	PASCYA
	Intermediate Egret	INEG	Mesophoyx intermedia	MESINT
+	Ipswich Sparrow	IPSP	Passerculus s. princeps	PASSPR
	Island Scrub-Jay	ISSJ	Aphelocoma insularis	APHINS
	Ivory Gull	IVGU	Pagophila eburnea	PAGEBU
	Ivory-billed Woodcreeper	IBIW*	Xiphorhynchus flavigaster	XIPFLA
	Ivory-billed Woodpecker	IBWO	Campephilus principalis	CAMPRI
	Jabiru	JABI	Jabiru mycteria	JABMYC
	Jack Snipe	JASN	Lymnocryptes minimus	LYMMIN
	Jamaican Becard	JABE	Pachyramphus niger	PACNIG
	Jamaican Blackbird	JABL	Nesopsar nigerrimus	NESNIG
	Jamaican Crow	JACR	Corvus jamaicensis	CORJAM
	Jamaican Elaenia	JAEL	Myiopagis cotta	MYICOT
	Jamaican Euphonia	JAEU	Euphonia jamaica	EUPJAM
	Jamaican Lizard-Cuckoo	JALC	Coccyzus vetula	COCVET
	Jamaican Mango	JAMA	Anthracothorax mango	ANTMAN
	Jamaican Oriole	JAOR	Icterus leucopteryx	ICTLEU
	Jamaican Owl	JAOW	Pseudoscops grammicus	PSEGRA
	Jamaican Pauraque	JAPA	Siphonorhis americana	SIPAME
	Jamaican Pewee	JAPE	Contopus pallidus	CONPAL
	Jamaican Spindalis	JAMS*	Spindalis nigricephala	SPINIG
	Jamaican Tody	JATO	Todus todus	TODTOD
	Jamaican Vireo	JAVI	Vireo modestus	VIRMOD
	Jamaican Woodpecker	JAWO	Melanerpes radiolatus	MELRAD
	Japanese Bush-Warbler	JABW	Cettia diphone	CETDIP
	Japanese Quail	JAQU	Coturnix japonica	COTJAP
	Japanese White-eye	JAWE	Zosterops japonicus	ZOSJAP
	Java Sparrow	JASP	Padda oryzivora	PADORY
	Jet Antbird	JEAN	Cercomacra nigricans	CERNIG
	Jouanin's Petrel	JOPE	Bulweria fallax	BULFAL
	Juan Fernandez Petrel	JFPE	Pterodroma externa	PTEEXT
	Juniper Titmouse	JUTI	Baeolophus ridgwayi	BAERID
	Kakawahie	KAKA	Paroreomyza flammea	PARFLA
	Kalij Pheasant	KAPH	Lophura leucomelanos	LOPLEU
	Kamao	KAMA	Myadestes myadestinus	MYAMYA
	Kauai Amakihi	KAAM	Hemignathus kauaiensis	HEMKAU
	Kauai Elepaio	KAEL	Chasiempis sclateri	CHASCL
	Kauai Oo	KAOO	Moho braccatus	MOHBRA
	Keel-billed Motmot	KBMO	Electron carinatum	ELECAR
	Keel-billed Toucan	KBTO	Ramphastos sulfuratus	RAMSUL
	Kelp Gull	KEGU	Larus dominicanus	LARDOM
	Kentucky Warbler	KEWA	Oporornis formosus	OPOFOR
	Kermadec Petrel	KEPE	Pterodroma neglecta	PTENEG
	Key West Quail-Dove	KWQD	Geotrygon chrysia	GEOCHR
	Killdeer	KILL	Charadrius vociferus	CHAVOC
	King Eider	KIEI	Somateria spectabilis	SOMSPE
	King Rail	KIRA	Rallus elegans	RALELE

	King Vulture	KIVU	Sarcoramphus papa	SARPAP
	Kioea	KIOE	Chaetoptila angustipluma	CHAANG
	Kirtland's Warbler	KIWA	Dendroica kirtlandii	DENKIR
	Kittlitz's Murrelet	KIMU	Brachyramphus brevirostris	BRABRE
	Kona Grosbeak	KOGR	Chloridops kona	CHLKON
	La Sagra's Flycatcher	LSFL	Myiarchus sagrae	MYISAG
	La Selle Thrush	LSTH	Turdus swalesi	TURSWA
	Labrador Duck	LABD*	Camptorhynchus labradorius	CAMLAB
	Ladder-backed Woodpecker	LBWO	Picoides scalaris	PICSCA
	Lanai Hookbill	LAHO	Dysmorodrepanis munroi	DYSMUN
	Lance-tailed Manakin	LATM*	Chiroxiphia lanceolata	CHILAN
	Lanceolated Monklet	LAMO	Micromonacha lanceolata	MICLAN
	Lanceolated Warbler	LANW*	Locustella lanceolata	LOCLAN
	Lapland Longspur	LALO	Calcarius lapponicus	CALLAP
+	Large Canada Goose	LCGO	Branta c. moffitti	BRACMO
+	Large-billed Sparrow	LBSP	Passerculus s. rostratus	PASSRO
	Large-billed Tern	LBTE	Phaetusa simplex	PHASIM
	Large-footed Finch	LFFI	Pezopetes capitalis	PEZCAP
	Lark Bunting	LARB*	Calamospiza melanocorys	CALMEC*
	Lark Sparrow	LASP	Chondestes grammacus	CHOGRA
	Lattice-tailed Trogon	LTTR	Trogon clathratus	TROCLA
	Laughing Falcon	LAFA	Herpetotheres cachinnans	HERCAC
	Laughing Gull	LAGU	Leucophaeus atricilla	LEUATC*
	Lavender Waxbill	LAVW*	Estrilda caerulescens	ESTCAE
	Lawrence's Goldfinch	LAGO	Spinus lawrencei	SPILAW
+	Lawrence's Warbler	LAWA	Vermivora pinus x chrysopt.	VERPCH
	Laysan Albatross	LAAL	Phoebastria immutabilis	PHOIMM
	Laysan Duck	LAYD*	Anas laysanensis	ANALAY
	Laysan Finch	LAFI	Telespiza cantans	TELCAN
	Laysan Rail	LARA	Porzana palmeri	PORPAL
+	Laysan X Black-foot. Albatross Hybrid	LBFH	Phoebastria immut. X nigripes	PHOIMN
	Lazuli Bunting	LAZB*	Passerina amoena	PASAMO
+	Lazuli x Indigo Bunting Hybrid	LIBH	Passerina amoena x cyanea	PASAMC
	Le Conte's Sparrow	LCSP	Ammodramus leconteii	AMMLEC
	Le Conte's Thrasher	LCTH	Toxostoma lecontei	TOXLEC
	Leach's Storm-Petrel	LESP	Oceanodroma leucorhoa	OCELEU
	Least Auklet	LEAU	Aethia pusilla	AETPUS
+	Least Bell's Vireo	LBVI	Vireo b. pusillus	VIRBPU
	Least Bittern	LEBI	Ixobrychus exilis	IXOEXI
	Least Flycatcher	LEFL	Empidonax minimus	EMPMIN
	Least Grebe	LEGR	Tachybaptus dominicus	TACDOM
	Least Pauraque	LEPA	Siphonorhis brewsteri	SIPBRE
	Least Sandpiper	LESA	Calidris minutilla	CALMIL*
	Least Storm-Petrel	LSTP*	Oceanodroma microsoma	OCEMIC
	Least Tern	LETE	Sternula antillarum	STEANT
	Lemon-spectacled Tanager	LSTA	Chlorothraupis olivacea	CHLOLI
	Lesser Akialoa	LEAK	Hemignathus obscurus	HEMOBS
	Lesser Antillean Bullfinch	LANB*	Loxigilla noctis	LOXNOC
	Lesser Antillean Flycatcher	LAFL	Myiarchus oberi	MYIOBE
	Lesser Antillean Pewee	LAPE	Contopus latirostris	CONLAT
	Lesser Antillean Saltator	LASA	Saltator albicollis	SALALB
	Lesser Antillean Swift	LASW	Chaetura martinica	CHAMAR
	Lesser Antillean Tanager	LATA	Tangara cucullata	TANCUC
	Lesser Black-backed Gull	LBBG	Larus fuscus	LARFUS
	Lesser Elaenia	LEEL	Elaenia chiriquensis	ELACHI
	Lesser Frigatebird	LEFR	Fregata ariel	FREARI

+	Lesser Golden-Plover	LEGP	Pluvialis dominica/fulva	PLUDOF
	Lesser Goldfinch	LEGO	Spinus psaltria	SPIPSA
	Lesser Greenlet	LESG*	Hylophilus decurtatus	HYLDEC
	Lesser Ground-Cuckoo	LEGC	Morococcyx erythropygus	MORERY
	Lesser Kiskadee	LEKI	Pitangus lictor	PITLIC
	Lesser Koa-Finch	LEKF	Rhodacanthis flaviceps	RHOFLA
	Lesser Nighthawk	LENI	Chordeiles acutipennis	CHOACU
	Lesser Prairie-Chicken	LEPC	Tympanuchus pallidicinctus	TYMPAL
	Lesser Roadrunner	LERO	Geococcyx velox	GEOVEL
	Lesser Sand-Plover	LSAP*	Charadrius mongolus	CHAMOG*
	Lesser Scaup	LESC	Aythya affinis	AYTAFF
+	Lesser Snow Goose Blue-morph	LSGB	Chen c. caerulescens	CHECCA
+	Lesser Snow Goose Intermediate-morph	LSGI	Chen c. caerulescens	CHECCA
+	Lesser Snow Goose White-morph	LSGW	Chen c. caerulescens	CHECCA
	Lesser Swallow-tailed Swift	LSTS	Panyptila cayennensis	PANCAY
	Lesser White-fronted Goose	LWFG	Anser erythropus	ANSERY
	Lesser Whitethroat	LEWH	Sylvia curruca	SYLCUR
	Lesser Yellow-headed Vulture	LYHV	Cathartes burrovianus	CATBUR
	Lesser Yellowlegs	LEYE	Tringa flavipes	TRIFLA
	Lewis's Woodpecker	LEWO	Melanerpes lewis	MELLEW
	Light-mantled Albatross	LMAL	Phoebetria palpebrata	PHOPAL
	Lilac-crowned Parrot	LCPA	Amazona finschi	AMAFIN
	Limpkin	LIMP	Aramus guarauna	ARAGUA
	Lincoln's Sparrow	LISP	Melospiza lincolnii	MELLIN
	Lineated Foliage-gleaner	LIFG	Syndactyla subalaris	SYNSUB
	Lineated Woodpecker	LIWO	Dryocopus lineatus	DRYLIN
	Little Bittern	LIBI	Ixobrychus minutus	IXOMIN
	Little Blue Heron	LBHE	Egretta caerulea	EGRCAE
	Little Bunting	LIBU	Emberiza pusilla	EMBPUS
	Little Cuckoo	LITC*	Coccycua minuta	COCMIT*
	Little Curlew	LICU	Numenius minutus	NUMMIN
	Little Egret	LIEG	Egretta garzetta	EGRGAR
	Little Gull	LIGU	Hydrocoloeus minutus	HYDMIN
	Little Ringed Plover	LRPL	Charadrius dubius	CHADUB
	Little Shearwater	LISH	Puffinus assimilis	PUFASS
	Little Stint	LIST	Calidris minuta	CALMIA*
	Little Tern	LITE	Sternula albifrons	STEALB
	Little Tinamou	LITI	Crypturellus soui	CRYSOU
	Loggerhead Kingbird	LOKI	Tyrannus caudifasciatus	TYRCAU
	Loggerhead Shrike	LOSH	Lanius ludovicianus	LANLUD
	Long-billed Curlew	LBCU	Numenius americanus	NUMAME
	Long-billed Dowitcher	LBDO	Limnodromus scolopaceus	LIMSCO
	Long-billed Gnatwren	LBGN	Ramphocaenus melanurus	RAMMEL
	Long-billed Hermit	LBIH*	Phaethornis longirostris	PHALON
	Long-billed Murrelet	LBMU	Brachyramphus perdix	BRAPER
	Long-billed Starthroat	LBST	Heliomaster longirostris	HELLON
	Long-billed Thrasher	LBTH	Toxostoma longirostre	TOXLON
	Long-eared Owl	LEOW	Asio otus	ASIOTU
	Long-tailed Duck	LTDU	Clangula hyemalis	CLAHYE
	Long-tailed Jaeger	LTJA	Stercorarius longicaudus	STELON
	Long-tailed Manakin	LOTM*	Chiroxiphia linearis	CHILIN
	Long-tailed Sabrewing	LTSA	Campylopterus excellens	CAMEXC
	Long-tailed Silky-flycatcher	LTSF	Ptilogonys caudatus	PTICAU
	Long-tailed Tyrant	LTTY	Colonia colonus	COLCOL
	Long-tailed Wood-Partridge	LTWP	Dendrortyx macroura	DENMAC
	Long-tailed Woodcreeper	LTWO	Deconychura longicauda	DECLON

	Long-toed Stint	LTST	Calidris subminuta	CALSUB
	Louisiana Waterthrush	LOWA	Parkesia motacilla	PARMOT
	Lovely Cotinga	LOCO	Cotinga amabilis	COTAMA
	Lucifer Hummingbird	LUHU	Calothorax lucifer	CALLUC
	Lucy's Warbler	LUWA	Oreothlypis luciae	ORELUC
	MacGillivray's Warbler	MGWA	Oporornis tolmiei	OPOTOL
	Magenta-throated Woodstar	MTWO	Calliphlox bryantae	CALBRY
	Magnificent Frigatebird	MAFR	Fregata magnificens	FREMAG
	Magnificent Hummingbird	MAHU	Eugenes fulgens	EUGFUL
	Magnolia Warbler	MAWA	Dendroica magnolia	DENMAG
	Mallard	MALL	Anas platyrhynchos	ANAPLA
	Mangrove Cuckoo	MACU	Coccyzus minor	COCMIR*
	Mangrove Hummingbird	MANH*	Amazilia boucardi	AMABOU
	Mangrove Swallow	MANS*	Tachycineta albilinea	TACALB
	Mangrove Vireo	MAVI	Vireo pallens	VIRPAL
+	Mangrove Warbler	MANW*	Dendroica p. erithachorides	DENPER
	Manx Shearwater	MASH	Puffinus puffinus	PUFPUF
	Marbled Godwit	MAGO	Limosa fedoa	LIMFED
	Marbled Murrelet	MAMU	Brachyramphus marmoratus	BRAMAR
	Marbled Wood-Quail	MAWQ	Odontophorus gujanensis	ODOGUJ
	Mariana Swiftlet	MASW	Aerodramus bartschi	AERBAR
	Markham's Storm-Petrel	MASP	Oceanodroma markhami	OCEMAR
	Maroon-chested Ground-Dove	MCGD	Claravis mondetoura	CLAMON
	Maroon-fronted Parrot	MFPA	Rhynchopsitta terrisi	RHYTER
	Marsh Sandpiper	MASA	Tringa stagnatilis	TRISTA
	Marsh Wren	MAWR	Cistothorus palustris	CISPAL
	Martinique Oriole	MAOR	Icterus bonana	ICTBON
	Masked Booby	MABO	Sula dactylatra	SULDAC
	Masked Duck	MADU	Nomonyx dominicus	NOMDOM
	Masked Tityra	MATI	Tityra semifasciata	TITSEM
	Masked Yellowthroat	MAYE	Geothlypis aequinoctialis	GEOAEQ
	Maui Alauahio	MAAL	Paroreomyza montana	PARMON
	Maui Parrotbill	MAPA	Pseudonestor xanthophrys	PSEXAN
	McCown's Longspur	MCLO	Rhynchophanes mccownii	RHYMCC
	McKay's Bunting	MKBU	Plectrophenax hyperboreus	PLEHYP
	Mealy Parrot	MEAP*	Amazona farinosa	AMAFAR
	Melodious Blackbird	MEBL	Dives dives	DIVDIV
	Merlin	MERL	Falco columbarius	FALCOL
	Mew Gull	MEGU	Larus canus	LARCAN
	Mexican Chickadee	MECH	Poecile sclateri	POESCL
+	Mexican Duck	MEDU	Anas p. diazi	ANAPDI
	Mexican Jay	MEJA	Aphelocoma ultramarina	APHULT
	Mexican Parrotlet	MEXP*	Forpus cyanopygius	FORCYA
	Mexican Sheartail	MESH	Doricha eliza	DORELI
	Mexican Whip-poor-will	MWPW	Caprimulgus arizonae	CAPARI
	Mexican Woodnymph	MEWO	Thalurania ridgwayi	THARID
	Middendorff's Grasshopper-Warbler	MIGW	Locustella ochotensis	LOCOCH
	Military Macaw	MIMA	Ara militaris	ARAMIL
	Millerbird	MILL	Acrocephalus familiaris	ACRFAM
+	Minima Cackling Goose	MCGO	Branta h. minima	BRAHMI
	Mississippi Kite	MIKI	Ictinia mississippiensis	ICTMIS
	Mitred Parakeet	MIPA	Aratinga mitrata	ARAMIT
	Monk Parakeet	MOPA	Myiopsitta monachus	MYIMON
	Montezuma Oropendola	MORO*	Psarocolius montezuma	PSAMON
	Montezuma Quail	MONQ*	Cyrtonyx montezumae	CYRMON
	Montserrat Oriole	MORI*	Icterus oberi	ICTOBE

	Mottled Duck	MODU	Anas fulvigula	ANAFUL
	Mottled Owl	MOOW	Ciccaba virgata	CICVIR
	Mottled Petrel	MOPE	Pterodroma inexpectata	PTEINE
	Mountain Bluebird	MOBL	Sialia currucoides	SIACUR
	Mountain Chickadee	MOCH	Poecile gambeli	POEGAM
	Mountain Elaenia	MOEL	Elaenia frantzii	ELAFRA
	Mountain Plover	MOPL	Charadrius montanus	CHAMOT*
	Mountain Quail	MOUQ*	Oreortyx pictus	OREPIC
	Mountain Thrush	MOTH	Turdus plebejus	TURPLE
	Mountain Trogon	MOTR	Trogon mexicanus	TROMEX
+	Mountain White-crowned Sparrow	MWCS	Zonotrichia l. oriantha	ZONLOR
	Mourning Dove	MODO	Zenaida macroura	ZENMAC
	Mourning Warbler	MOWA	Oporornis philadelphia	OPOPHI
	Mouse-colored Tyrannulet	MCTY	Phaeomyias murina	PHAMUR
	Moustached Antwren	MOAN	Myrmotherula ignota	MYRIGN
	Mugimaki Flycatcher	MUFL	Ficedula mugimaki	FICMUG
	Murphy's Petrel	MUPE	Pterodroma ultima	PTEULT
	Muscovy Duck	MUDU	Cairina moschata	CAIMOS
	Mute Swan	MUSW	Cygnus olor	CYGOLO
+	Myrtle Warbler	MYWA	Dendroica c. coronata	DENCCO
	Narcissus Flycatcher	NAFL	Ficedula narcissina	FICNAR
	Narrow-billed Tody	NBTO	Todus angustirostris	TODANG
	Nashville Warbler	NAWA	Oreothlypis ruficapilla	ORERUF
	Nava's Wren	NAWR	Hylorchilus navai	HYLNAV
	Nazca Booby	NABO	Sula granti	SULGRA
	Nelson's Sparrow	NESP	Ammodramus nelsoni	AMMNEL
	Neotropic Cormorant	NECO	Phalacrocorax brasilianus	PHABRA
+	Newell's Shearwater	NESH	Puffinus a. newelli	PUFANE
	Nicaraguan Grackle	NIGR	Quiscalus nicaraguensis	QUINIC
	Nicaraguan Seed-Finch	NISF	Oryzoborus nuttingi	ORYNUT
	Nightingale Wren	NIWR	Microcerculus philomela	MICPHI
	Nihoa Finch	NIFI	Telespiza ultima	TELULT
	Northern Barred-Woodcreeper	NOBW	Dendrocolaptes sanctithomae	DENSAN
	Northern Beardless-Tyrannulet	NOBT	Camptostoma imberbe	CAMIMB
	Northern Bentbill	NOBE	Oncostoma cinereigulare	ONCCIN
	Northern Bobwhite	NOBO	Colinus virginianus	COLVIR
	Northern Cardinal	NOCA	Cardinalis cardinalis	CARCAI*
	Northern Flicker	NOFL	Colaptes auratus	COLAUT*
+	Northern Flicker Intergrade	NFIN	Colaptes a.auratus x cafer	COLAAC
	Northern Fulmar	NOFU	Fulmarus glacialis	FULGLA
	Northern Gannet	NOGA	Morus bassanus	MORBAS
	Northern Goshawk	NOGO	Accipiter gentilis	ACCGEN
	Northern Harrier	NOHA	Circus cyaneus	CIRCYA
	Northern Hawk Owl	NHOW	Surnia ulula	SURULU
	Northern Jacana	NOJA	Jacana spinosa	JACSPI
	Northern Lapwing	NOLA	Vanellus vanellus	VANVAN
	Northern Mockingbird	NOMO	Mimus polyglottos	MIMPOL
	Northern Parula	NOPA	Parula americana	PARAME
	Northern Pintail	NOPI	Anas acuta	ANAACU
	Northern Potoo	NORP*	Nyctibius jamaicensis	NYCJAM
	Northern Pygmy-Owl	NOPO	Glaucidium gnoma	GLAGNO
	Northern Rough-winged Swallow	NRWS	Stelgidopteryx serripennis	STESER
	Northern Saw-whet Owl	NSWO	Aegolius acadicus	AEGACA
	Northern Scrub-Flycatcher	NOSF	Sublegatus arenarum	SUBARE
	Northern Shoveler	NSHO*	Anas clypeata	ANACLY
	Northern Shrike	NSHR*	Lanius excubitor	LANEXC

	Northern Waterthrush	NOWA	Parkesia noveboracensis	PARNOV
	Northern Wheatear	NOWH	Oenanthe oenanthe	OENOEN
	Northwestern Crow	NOCR	Corvus caurinus	CORCAU
	Nukupuu	NUKU	Hemignathus lucidus	HEMLUC
	Nutmeg Mannikin	NUMA	Lonchura punctulata	LONPUN
+	Nuttall's White-crowned Sparrow	NWCS	Zonotrichia l. nuttalli	ZONLNU
	Nuttall's Woodpecker	NUWO	Picoides nuttallii	PIDNUT*
	Nutting's Flycatcher	NUFL	Myiarchus nuttingi	MYINUT
	Oahu Alauahio	OAAL	Paroreomyza maculata	PARMAA*
	Oahu Amakihi	OAAM	Hemignathus flavus	HEMFLS*
	Oahu Elepaio	OAEL	Chasiempis ibidis	CHAIBI
	Oahu Oo	OAOO	Moho apicalis	MOHAPI
	Oak Titmouse	OATI	Baeolophus inornatus	BAEINO
	Oaxaca Sparrow	OASP	Aimophila notosticta	AIMNOT
	Ocellated Antbird	OCAN	Phaenostictus mcleannani	PHAMCL
	Ocellated Crake	OCCR	Micropygia schomburgkii	MICSCH
	Ocellated Poorwill	OCPO	Nyctiphrynus ocellatus	NYCOCE
	Ocellated Quail	OCQU	Cyrtonyx ocellatus	CYROCE
	Ocellated Thrasher	OCTH	Toxostoma ocellatum	TOXOCE
	Ocellated Turkey	OCTU	Meleagris ocellata	MELOCE
	Ochraceous Pewee	OCPE	Contopus ochraceus	CONOCH
	Ochraceous Wren	OCWR	Troglodytes ochraceus	TROOCH
	Ochre-bellied Flycatcher	OBFL	Mionectes oleagineus	MIOOLE
	Ochre-breasted Antpitta	OBAN	Grallaricula flavirostris	GRAFLA
	Oilbird	OILB	Steatornis caripensis	STECAR
	Olivaceous Flatbill	OLFL	Rhynchocyclus olivaceus	RHYOLI
	Olivaceous Piculet	OLPI	Picumnus olivaceus	PICOLI
	Olivaceous Woodcreeper	OLWO	Sittasomus griseicapillus	SITGRI
	Olive Sparrow	OLSP	Arremonops rufivirgatus	ARRRUF
	Olive Warbler	OLWA	Peucedramus taeniatus	PEUTAE
	Olive-backed Euphonia	OBAE*	Euphonia gouldi	EUPGOU
	Olive-backed Pipit	OBPI	Anthus hodgsoni	ANTHOD
	Olive-backed Quail-Dove	OBQD	Geotrygon veraguensis	GEOVEG*
	Olive-capped Warbler	OCAW*	Dendroica pityophila	DENPIT
	Olive-crowned Yellowthroat	OCYE	Geothlypis semiflava	GEOSEM
	Olive-sided Flycatcher	OSFL	Contopus cooperi	CONCOO
	Olive-striped Flycatcher	OSTF*	Mionectes olivaceus	MIOOLI
	Olive-throated Parakeet	OTPA	Aratinga nana	ARANAN
	Olomao	OLOM	Myadestes lanaiensis	MYALAN
	Omao	OMAO	Myadestes obscurus	MYAOBS
	One-colored Becard	OCBE	Pachyramphus homochrous	PACHOM
	Orange Bishop	ORBI	Euplectes franciscanus	EUPFRA
	Orange Oriole	ORAO*	Icterus auratus	ICTAUT*
	Orange-bellied Euphonia	OBEE*	Euphonia xanthogaster	EUPXAN
	Orange-bellied Trogon	OBTR	Trogon aurantiiventris	TROAUR
	Orange-billed Nightingale-Thrush	OBNT	Catharus aurantiirostris	CATAUN*
	Orange-billed Sparrow	OBSP	Arremon aurantiirostris	ARRAUR
	Orange-breasted Bunting	OBBU	Passerina leclancherii	PASLEC
	Orange-breasted Falcon	OBFA	Falco deiroleucus	FALDEI
	Orange-cheeked Waxbill	OCHW*	Estrilda melpoda	ESTMEL
	Orange-chinned Parakeet	OCPA	Brotogeris jugularis	BROJUG
	Orange-collared Manakin	OCMA	Manacus aurantiacus	MANAUR
	Orange-crowned Oriole	OCOR	Icterus auricapillus	ICTAUC*
	Orange-crowned Warbler	OCWA	Oreothlypis celata	ORECEL
	Orange-fronted Parakeet	OFPA	Aratinga canicularis	ARACAN
	Orangequit	ORAN	Euneornis campestris	EUNCAM

	Orchard Oriole	OROR	Icterus spurius	ICTSPU
+	Oregon Junco	ORJU	Junco h. oregonus	JUNHOR
	Oriental Cuckoo	ORCU	Cuculus optatus	CUCOPT
	Oriental Greenfinch	ORGR	Chloris sinica	CHLSIN
	Oriental Pratincole	ORPR	Glareola maldivarum	GLAMAL
	Oriental Scops-Owl	ORSO	Otus sunia	OTUSUN
	Oriental Turtle-Dove	ORTD	Streptopelia orientalis	STRORI
	Oriente Warbler	ORWA	Teretistris fornsi	TERFOR
	Orinoco Goose	ORGO	Neochen jubata	NEOJUB
	Ornate Hawk-Eagle	ORHE	Spizaetus ornatus	SPIORN
	Osprey	OSPR	Pandion haliaetus	PANHAL
	Ou	OU	Psittirostra psittacea	PSIPSI
	Ovenbird	OVEN	Seiurus aurocapilla	SEIAUR
	Pacific Antwren	PAAN	Myrmotherula pacifica	MYRPAC
	Pacific Golden-Plover	PAGP	Pluvialis fulva	PLUFUL
	Pacific Loon	PALO	Gavia pacifica	GAVPAC
	Pacific Parakeet	PACP*	Aratinga strenua	ARASTR
	Pacific Screech-Owl	PASO	Megascops cooperi	MEGCOO
	Pacific Wren	PAWR	Troglodytes pacificus	TROPAC
	Pacific-slope Flycatcher	PSFL	Empidonax difficilis	EMPDIF
	Paint-billed Crake	PBCR	Neocrex erythrops	NEOERY
	Painted Bunting	PABU	Passerina ciris	PASCIR
	Painted Parakeet	PAIP*	Pyrrhura picta	PYRPIC
	Painted Redstart	PARE	Myioborus pictus	MYIPIC
	Pale-bellied Hermit	PBHE	Phaethornis anthophilus	PHAANT
	Pale-billed Woodpecker	PBIW*	Campephilus guatemalensis	CAMGUA
	Pale-breasted Spinetail	PBSP	Synallaxis albescens	SYNALB
	Pale-eyed Pygmy-Tyrant	PEPT	Lophotriccus pilaris	LOPPIR*
	Pale-vented Pigeon	PVPI	Patagioenas cayennensis	PATCAY
	Pale-vented Thrush	PVTH	Turdus obsoletus	TUROBL*
	Palila	PALI	Loxioides bailleui	LOXBAI
	Pallas's Bunting	PALB*	Emberiza pallasi	EMBPAL
	Pallas's Leaf-Warbler	PALW	Phylloscopus proregulus	PHYPRO
	Palm Crow	PACR	Corvus palmarum	CORPAL
	Palm Tanager	PALT*	Thraupis palmarum	THRPAL
	Palm Warbler	PAWA	Dendroica palmarum	DENPAL
	Palmchat	PALM	Dulus dominicus	DULDOM
	Paltry Tyrannulet	PATY	Zimmerius vilissimus	ZIMVIL
	Panama Flycatcher	PAFL	Myiarchus panamensis	MYIPAN
	Parakeet Auklet	PAAU	Aethia psittacula	AETPSI
	Parasitic Jaeger	PAJA	Stercorarius parasiticus	STEPAS*
	Parkinson's Petrel	PAPE	Procellaria parkinsoni	PROPAR
	Passenger Pigeon	PAPI	Ectopistes migratorius	ECTMIG
	Passerini's Tanager	PAST*	Ramphocelus passerinii	RAMPAS
	Pearl Kite	PEKI	Gampsonyx swainsonii	GAMSWA
	Pearly-breasted Cuckoo	PBCU	Coccyzus euleri	COCEUL
	Pearly-eyed Thrasher	PETH	Margarops fuscatus	MARFUS
	Pechora Pipit	PEPI	Anthus gustavi	ANTGUS
	Pectoral Sandpiper	PESA	Calidris melanotos	CALMET*
	Peg-billed Finch	PBFI	Acanthidops bairdi	ACABAI
	Pelagic Cormorant	PECO	Phalacrocorax pelagicus	PHAPEL
	Peregrine Falcon	PEFA	Falco peregrinus	FALPER
	Peruvian Booby	PEBO	Sula variegata	SULVAR
	Phainopepla	PHAI	Phainopepla nitens	PHANIT
	Pheasant Cuckoo	PHCU	Dromococcyx phasianellus	DROPHA
	Philadelphia Vireo	PHVI	Vireo philadelphicus	VIRPHI

Pied Puffbird	PIPU	Notharchus tectus	NOTTEC
Pied Water-Tyrant	PIWT	Fluvicola pica	FLUPIC
Pied-billed Grebe	PBGR	Podilymbus podiceps	PODPOD
Pigeon Guillemot	PIGU	Cepphus columba	CEPCOL
Pileated Flycatcher	PILF*	Xenotriccus mexicanus	XENMEX
Pileated Woodpecker	PIWO	Dryocopus pileatus	DRYPIL
Pin-tailed Snipe	PTSN	Gallinago stenura	GALSTE
Pin-tailed Whydah	PTWH	Vidua macroura	VIDMAC
Pine Bunting	PIBU	Emberiza leucocephalos	EMBLEU
Pine Flycatcher	PINF*	Empidonax affinis	EMPAFF
Pine Grosbeak	PIGR	Pinicola enucleator	PINENU
Pine Siskin	PISI	Spinus pinus	SPIPIN
Pine Warbler	PIWA	Dendroica pinus	DENPIN
Pink-footed Goose	PFGO	Anser brachyrhynchus	ANSBRA
Pink-footed Shearwater	PFSH	Puffinus creatopus	PUFCRE
Pink-headed Warbler	PHWA	Ergaticus versicolor	ERGVER
Pinnated Bittern	PIBI	Botaurus pinnatus	BOTPIN
Pinyon Jay	PIJA	Gymnorhinus cyanocephalus	GYMCYA
Piping Plover	PIPL	Charadrius melodus	CHAMEL
Piratic Flycatcher	PIFL	Legatus leucophaius	LEGLEU
Pirre Bush-Tanager	PIBT	Chlorospingus inornatus	CHLINO
Pirre Hummingbird	PIHU	Goethalsia bella	GOEBEL
Pirre Warbler	PIRW*	Basileuterus ignotus	BASIGN
Plain Antvireo	PLAN	Dysithamnus mentalis	DYSMEN
Plain Chachalaca	PLCH	Ortalis vetula	ORTVET
Plain Pigeon	PLAP*	Patagioenas inornata	PATINO
Plain Wren	PLWR	Thryothorus modestus	THRMOD
Plain Xenops	PLXE	Xenops minutus	XENMIT*
Plain-breasted Ground-Dove	PBGD	Columbina minuta	COLMIN
Plain-brown Woodcreeper	PBRW*	Dendrocincla fuliginosa	DECFUL*
Plain-capped Starthroat	PCST	Heliomaster constantii	HELCON
Plain-colored Tanager	PCTA	Tangara inornata	TANINO
Plumbeous Hawk	PLHA	Leucopternis plumbeus	LEUPLU
Plumbeous Kite	PLKI	Ictinia plumbea	ICTPLU
Plumbeous Pigeon	PLUP*	Patagioenas plumbea	PATPLU
Plumbeous Vireo	PLVI	Vireo plumbeus	VIRPLU
Plumbeous Warbler	PLWA	Dendroica plumbea	DENPLU
Pomarine Jaeger	POJA	Stercorarius pomarinus	STEPOM
Poo-uli	POUL	Melamprosops phaeosoma	MELPHA
Prairie Falcon	PRFA	Falco mexicanus	FALMEX
Prairie Warbler	PRAW*	Dendroica discolor	DENDIS
Prevost's Ground-Sparrow	PRGS	Melozone biarcuata	MELBIA
Prong-billed Barbet	PBBA	Semnornis frantzii	SEMFRA
Prothonotary Warbler	PROW*	Protonotaria citrea	PROCIT
Puaiohi	PUAI	Myadestes palmeri	MYAPAL
Puerto Rican Bullfinch	PRBU	Loxigilla portoricensis	LOXPOR
Puerto Rican Emerald	PREM	Chlorostilbon maugaeus	CHLMAU
Puerto Rican Flycatcher	PRFL	Myiarchus antillarum	MYIANT
Puerto Rican Lizard-Cuckoo	PRLC	Coccyzus vieilloti	COCVIE
Puerto Rican Nightjar	PRNI	Caprimulgus noctitherus	CAPNOC
Puerto Rican Oriole	PROR	Icterus portoricensis	ICTPOR
Puerto Rican Parrot	PRPA	Amazona vittata	AMAVIT
Puerto Rican Screech-Owl	PRSO	Megascops nudipes	MEGNUD
Puerto Rican Spindalis	PRSP	Spindalis portoricensis	SPIPOR
Puerto Rican Tanager	PRTA	Nesospingus speculiferus	NESSPE
Puerto Rican Tody	PRTO	Todus mexicanus	TODMEX

	Puerto Rican Vireo	PRVI	Vireo latimeri	VIRLAT
	Puerto Rican Woodpecker	PRWO	Melanerpes portoricensis	MELPOR
+	Puget Sound White-crowned Sparrow	PSWS	Zonotrichia l. pugetensis	ZONLPU
	Purple Finch	PUFI	Carpodacus purpureus	CARPUR
	Purple Gallinule	PUGA	Porphyrio martinica	PORMAR
	Purple Heron	PUHE	Ardea purpurea	ARDPUR
	Purple Honeycreeper	PUHO	Cyanerpes caeruleus	CYACAE
	Purple Martin	PUMA	Progne subis	PROSUB
	Purple Sandpiper	PUSA	Calidris maritima	CALMAR
	Purple-crowned Fairy	PCFA	Heliothryx barroti	HELBAR
	Purple-throated Carib	PTCA	Eulampis jugularis	EULJUG
	Purple-throated Fruitcrow	PTFR	Querula purpurata	QUEPUR
	Purple-throated Mountain-gem	PTMG	Lampornis calolaemus	LAMCAL
	Purple-throated Woodstar	PTWO	Calliphlox mitchellii	CALMIT
	Purplish-backed Jay	PBJA	Cyanocorax beecheii	CYABEE
	Purplish-backed Quail-Dove	PBQD	Geotrygon lawrencii	GEOLAW
	Pygmy Nuthatch	PYNU	Sitta pygmaea	SITPYG
	Pyrrhuloxia	PYRR	Cardinalis sinuatus	CARSIN
	Razorbill	RAZO	Alca torda	ALCTOR
	Red Avadavat	REAV	Amandava amandava	AMAAMN*
	Red Crossbill	RECR	Loxia curvirostra	LOXCUR
	Red Junglefowl	REJU	Gallus gallus	GALGAS*
	Red Knot	REKN	Calidris canutus	CALCAN
	Red Phalarope	REPH	Phalaropus fulicarius	PHAFUC*
	Red Siskin	RESI	Spinus cucullatus	SPICUC
	Red Warbler	REWA	Ergaticus ruber	ERGRUB
	Red-and-green Macaw	RAGM	Ara chloropterus	ARACHS*
	Red-bellied Woodpecker	RBWO	Melanerpes carolinus	MELCAR
	Red-billed Leiothrix	RBLE	Leiothrix lutea	LEILUT
	Red-billed Pigeon	RBPI	Patagioenas flavirostris	PATFLA
	Red-billed Scythebill	RBSC	Campylorhamphus trochilirostris	CAMTRO
	Red-billed Tropicbird	RBTR	Phaethon aethereus	PHAAET
	Red-breasted Blackbird	RBBL	Sturnella militaris	STUMIL
	Red-breasted Chat	RBRC*	Granatellus venustus	GRAVEN
	Red-breasted Merganser	RBME	Mergus serrator	MERSER
	Red-breasted Nuthatch	RBNU	Sitta canadensis	SITCAN
	Red-breasted Sapsucker	RBSA	Sphyrapicus ruber	SPHRUB
	Red-capped Manakin	RCMA	Pipra mentalis	PIPMEN
	Red-cheeked Cordonbleu	RCCO	Uraeginthus bengalus	URABEN
	Red-cockaded Woodpecker	RCWO	Picoides borealis	PICBOR
	Red-crested Cardinal	RCCA	Paroaria coronata	PARCOR
	Red-crowned Ant-Tanager	RCAT	Habia rubica	HABRUB
	Red-crowned Parrot	RCPA	Amazona viridigenalis	AMAVIG*
	Red-crowned Woodpecker	RCRW*	Melanerpes rubricapillus	MELRUB
	Red-eyed Vireo	REVI	Vireo olivaceus	VIROLI
	Red-faced Cormorant	RFCO	Phalacrocorax urile	PHAURI
	Red-faced Spinetail	RFSP	Cranioleuca erythrops	CRAERY
	Red-faced Warbler	RFWA	Cardellina rubrifrons	CARRUB
	Red-flanked Bluetail	RFBL	Tarsiger cyanurus	TARCYA
	Red-footed Booby	RFBO	Sula sula	SULSUL
	Red-footed Falcon	RFFA	Falco vespertinus	FALVES
	Red-fronted Parrotlet	RFPA	Touit costaricensis	TOUCOS
	Red-headed Barbet	RHBA	Eubucco bourcierii	EUBBOU
	Red-headed Tanager	RHTA	Piranga erythrocephala	PIRERY
	Red-headed Woodpecker	RHWO	Melanerpes erythrocephalus	MELERY
	Red-legged Honeycreeper	RLHO	Cyanerpes cyaneus	CYACYU*

	Red-legged Kittiwake	RLKI	Rissa brevirostris	RISBRE
	Red-legged Thrush	RLTH	Turdus plumbeus	TURPLU
	Red-lored Parrot	RLPA	Amazona autumnalis	AMAAUT
	Red-naped Sapsucker	RNSA	Sphyrapicus nuchalis	SPHNUC
+	Red-naped X Red-breasted Saps. Hybrid	RRSH	Sphyrapicus nuchalis x ruber	SPHNUR
	Red-necked Grebe	RNGR	Podiceps grisegena	PODGRI
	Red-necked Parrot	RNPA	Amazona arausiaca	AMAARA
	Red-necked Phalarope	RNPH	Phalaropus lobatus	PHALOB
	Red-necked Stint	RNST	Calidris ruficollis	CALRUF
	Red-rumped Woodpecker	RRWO	Veniliornis kirkii	VENKIR
+	Red-shafted Flicker	RSFL	Colaptes a. cafer	COLACA
	Red-shouldered Blackbird	RSBL	Agelaius assimilis	AGEASS
	Red-shouldered Hawk	RSHA	Buteo lineatus	BUTLIN
	Red-tailed Hawk	RTHA	Buteo jamaicensis	BUTJAM
	Red-tailed Tropicbird	RTTR	Phaethon rubricauda	PHARUB
	Red-throated Ant-Tanager	RTAT	Habia fuscicauda	HABFUS
	Red-throated Caracara	RTCA	Ibycter americanus	IBYAME
	Red-throated Loon	RTLO	Gavia stellata	GAVSTE
	Red-throated Pipit	RTPI	Anthus cervinus	ANTCER
	Red-vented Bulbul	RVBU	Pycnonotus cafer	PYCCAF
	Red-whiskered Bulbul	RWBU	Pycnonotus jocosus	PYCJOC
	Red-winged Blackbird	RWBL	Agelaius phoeniceus	AGEPHO
	Reddish Egret	REEG	Egretta rufescens	EGRRUF
	Redhead	REDH	Aythya americana	AYTAME
	Redwing	REDW	Turdus iliacus	TURILI
	Reed Bunting	REBU	Emberiza schoeniclus	EMBSCH
	Resplendent Quetzal	REQU	Pharomachrus mocinno	PHAMOC
	Rhinoceros Auklet	RHAU	Cerorhinca monocerata	CERMON
	Ridgway's Hawk	RIHA	Buteo ridgwayi	BUTRID
	Ring-billed Gull	RBGU	Larus delawarensis	LARDEL
	Ring-necked Duck	RNDU	Aythya collaris	AYTCOL
	Ring-necked Pheasant	RNEP*	Phasianus colchicus	PHACOL
	Ring-tailed Pigeon	RTAP*	Patagioenas caribaea	PATCAR
	Ringed Kingfisher	RIKI	Megaceryle torquata	MEGTOR
	Ringed Storm-Petrel	RISP	Oceanodroma hornbyi	OCEHOR
	Riverside Wren	RIWR	Thryothorus semibadius	THRSEM
	Roadside Hawk	ROHA	Buteo magnirostris	BUTMAG
	Rock Pigeon	ROPI	Columba livia	COLLIV
	Rock Ptarmigan	ROPT	Lagopus muta	LAGMUT
	Rock Sandpiper	ROSA	Calidris ptilocnemis	CALPTI
	Rock Wren	ROWR	Salpinctes obsoletus	SALOBS
	Rose-bellied Bunting	RBBU	Passerina rositae	PASROS
	Rose-breasted Grosbeak	RBGR	Pheucticus ludovicianus	PHELUD
	Rose-ringed Parakeet	RRPA	Psittacula krameri	PSIKRA
	Rose-throated Becard	RTBE	Pachyramphus aglaiae	PACAGL
	Rose-throated Tanager	RTTA	Piranga roseogularis	PIRROS
	Roseate Spoonbill	ROSP	Platalea ajaja	PLAAJA
	Roseate Tern	ROST*	Sterna dougallii	STEDOU
	Ross's Goose	ROGO	Chen rossii	CHEROS
	Ross's Gull	ROGU	Rhodostethia rosea	RHSROS*
	Rosy Thrush-Tanager	ROTT	Rhodinocichla rosea	RHNROS*
	Rough-legged Hawk	RLHA	Buteo lagopus	BUTLAG
	Rough-legged Tyrannulet	RLTY	Phyllomyias burmeisteri	PHYBUR
	Royal Flycatcher	ROFL	Onychorhynchus coronatus	ONYCOR
	Royal Tern	ROYT*	Thalasseus maximus	THAMAX
	Ruby-crowned Kinglet	RCKI	Regulus calendula	REGCAL

Ruby-throated Hummingbird	RTHU	Archilochus colubris	ARCCOL
Ruby-topaz Hummingbird	RTOH*	Chrysolampis mosquitus	CHRMOS
Ruddy Crake	RUCR	Laterallus ruber	LATRUB
Ruddy Duck	RUDU	Oxyura jamaicensis	OXYJAM
Ruddy Foliage-gleaner	RUFG	Automolus rubiginosus	AUTRUB
Ruddy Ground-Dove	RUGD	Columbina talpacoti	COLTAL
Ruddy Pigeon	RUDP*	Patagioenas subvinacea	PATSUB
Ruddy Quail-Dove	RUQD	Geotrygon montana	GEOMON
Ruddy Treerunner	RUTR	Margarornis rubiginosus	MARRUB
Ruddy Turnstone	RUTU	Arenaria interpres	AREINT
Ruddy Woodcreeper	RUWO	Dendrocincla homochroa	DENHOM
Ruddy-breasted Seedeater	RBSE	Sporophila minuta	SPOMIN
Ruddy-capped Nightingale-Thrush	RCNT	Catharus frantzii	CATFRA
Ruddy-tailed Flycatcher	RDTF*	Terenotriccus erythrurus	TERERY
Rufescent Tiger-Heron	RTHE	Tigrisoma lineatum	TIGLIN
Ruff	RUFF	Philomachus pugnax	PHIPUG
Ruffed Grouse	RUGR	Bonasa umbellus	BONUMB
Rufous Hummingbird	RUHU	Selasphorus rufus	SELRUF
Rufous Motmot	RMOT*	Baryphthengus martii	BARMAR
Rufous Mourner	RMOU*	Rhytipterna holerythra	RHYHOL
Rufous Nightjar	RUNI	Caprimulgus rufus	CAPRUF
Rufous Piha	RUFP*	Lipaugus unirufus	LIPUNI
Rufous Sabrewing	RUSA	Campylopterus rufus	CAMRUS*
Rufous-and-white Wren	RAWW	Thryothorus rufalbus	THRRUL*
Rufous-backed Robin	RBRO	Turdus rufopalliatus	TURRUP*
Rufous-bellied Chachalaca	RBEC*	Ortalis wagleri	ORTWAG
Rufous-breasted Antthrush	RBAN	Formicarius rufipectus	FORRUF
Rufous-breasted Hermit	RBHE	Glaucis hirsutus	GLAHIR
Rufous-breasted Spinetail	RBRS*	Synallaxis erythrothorax	SYNERY
Rufous-breasted Wren	RBSW*	Thryothorus rutilus	THRRUT
Rufous-browed Peppershrike	RBPE	Cyclarhis gujanensis	CYCGUJ
Rufous-browed Tyrannulet	RBTY	Phylloscartes superciliaris	PHYSUP
Rufous-browed Wren	RBWW*	Troglodytes rufociliatus	TRORUC*
Rufous-capped Brush-Finch	RCBF	Atlapetes pileatus	ATLPIL
Rufous-capped Warbler	RCWA	Basileuterus rufifrons	BASRUF
Rufous-collared Robin	RCRO	Turdus rufitorques	TURRUT*
Rufous-collared Sparrow	RCOS*	Zonotrichia capensis	ZONCAP
Rufous-crested Coquette	RCRC*	Lophornis delattrei	LOPDEL
Rufous-crowned Sparrow	RCSP	Aimophila ruficeps	AIMRUP*
Rufous-naped Wren	RNAW*	Campylorhynchus rufinucha	CAMRUN*
Rufous-necked Wood-Rail	RUWR*	Aramides axillaris	ARAAXI
Rufous-rumped Antwren	RRAN	Terenura callinota	TERCAL
+ Rufous-sided Towhee	RSTO	Pipilo maculatus/erythr.	PIPMAE
Rufous-tailed Flycatcher	RFTF*	Myiarchus validus	MYIVAL
Rufous-tailed Hummingbird	RTAH*	Amazilia tzacatl	AMATZA
Rufous-tailed Jacamar	RTJA	Galbula ruficauda	GALRUF
Rufous-tailed Robin	RTRO	Luscinia sibilans	LUSSIB
Rufous-throated Solitaire	RTSO	Myadestes genibarbis	MYAGEN
Rufous-vented Chachalaca	RVCH	Ortalis ruficauda	ORTRUF
Rufous-vented Ground-Cuckoo	RVGC	Neomorphus geoffroyi	NEOGEO
Rufous-winged Antwren	RWAN	Herpsilochmus rufimarginatus	HERRUF
Rufous-winged Sparrow	RWSP	Peucaea carpalis	PEUCAR
Rufous-winged Tanager	RWTA	Tangara lavinia	TANLAV
Rufous-winged Woodpecker	RWWO	Piculus simplex	PICSIM
Russet Antshrike	RUAN	Thamnistes anabatinus	THAANA
Russet Nightingale-Thrush	RUNT	Catharus occidentalis	CATOCC

Russet-crowned Motmot	RCMO	Momotus mexicanus	MOMMEX
Russet-crowned Quail-Dove	RCQD	Geotrygon goldmani	GEOGOL
Rustic Bunting	RUBU	Emberiza rustica	EMBRUS
Rusty Blackbird	RUBL	Euphagus carolinus	EUPCAR
Rusty Sparrow	RUSP	Aimophila rufescens	AIMRUS*
Rusty-backed Spinetail	RBAS*	Cranioleuca vulpina	CRAVUL
Rusty-crowned Ground-Sparrow	RCGS	Melozone kieneri	MELKIE
Rusty-margined Flycatcher	RMFL	Myiozetetes cayanensis	MYICAY
Sabine's Gull	SAGU	Xema sabini	XEMSAB
Sad Flycatcher	SAFL	Myiarchus barbirostris	MYIBAR
Saffron Finch	SAFI	Sicalis flaveola	SICFLA
Saffron-headed Parrot	SHPA	Pyrilia pyrilia	PYRPYL*
Sage Sparrow	SAGS*	Amphispiza belli	AMPBEL
Sage Thrasher	SATH	Oreoscoptes montanus	OREMON
Saltmarsh Sparrow	SALS*	Ammodramus caudacutus	AMMCAU
San Andres Vireo	SAVI	Vireo caribaeus	VIRCAB*
San Blas Jay	SBJA	Cyanocorax sanblasianus	CYASAN
Sanderling	SAND	Calidris alba	CALALB
Sandhill Crane	SACR	Grus canadensis	GRUCAN
Sandwich Tern	SATE	Thalasseus sandvicensis	THASAN
Sapayoa	SAPA	Sapayoa aenigma	SAPAEN
Sapphire-throated Hummingbird	SHTH*	Lepidopyga coeruleogularis	LEPCOE
Savanna Hawk	SAHA	Buteogallus meridionalis	BUTMER
Savannah Sparrow	SAVS*	Passerculus sandwichensis	PASSAN
Say's Phoebe	SAPH	Sayornis saya	SAYSAY
Scale-crested Pygmy-Tyrant	SCPT	Lophotriccus pileatus	LOPPIT*
Scaled Antpitta	SCAA*	Grallaria guatimalensis	GRAGUA
Scaled Pigeon	SCPI	Patagioenas speciosa	PATSPE
Scaled Quail	SCQU	Callipepla squamata	CALSQU
Scaly-breasted Hummingbird	SBRH*	Phaeochroa cuvierii	PHACUV
Scaly-breasted Thrasher	SBTH	Allenia fusca	ALLFUC
Scaly-breasted Wren	SCBW*	Microcerculus marginatus	MICMAR
Scaly-naped Pigeon	SNPI	Patagioenas squamosa	PATSQU
Scaly-throated Foliage-gleaner	STFG	Anabacerthia variegaticeps	ANAVAR
Scaly-throated Leaftosser	STLE	Sclerurus guatemalensis	SCLGUA
Scarlet Ibis	SCIB	Eudocimus ruber	EUDRUB
Scarlet Macaw	SCMA	Ara macao	ARAMAC
Scarlet Tanager	SCTA	Piranga olivacea	PIROLI
Scarlet-browed Tanager	SBTA	Heterospingus xanthopygius	HETXAN
Scarlet-rumped Cacique	SRCA	Cacicus uropygialis	CACURO
Scarlet-thighed Dacnis	STDA	Dacnis venusta	DACVEN
Scintillant Hummingbird	SCHU	Selasphorus scintilla	SELSCI
Scissor-tailed Flycatcher	STFL	Tyrannus forficatus	TYRFOR
Scott's Oriole	SCOR	Icterus parisorum	ICTPAR
Scrub Euphonia	SEUP*	Euphonia affinis	EUPAFF
Scrub Greenlet	SCRG*	Hylophilus flavipes	HYLFLA
Seaside Sparrow	SESP	Ammodramus maritimus	AMMMAR
Sedge Warbler	SEWA	Acrocephalus schoenobaenus	ACRSCH
Sedge Wren	SEWR	Cistothorus platensis	CISPLA
Semipalmated Plover	SEPL	Charadrius semipalmatus	CHASEM
Semipalmated Sandpiper	SESA	Calidris pusilla	CALPUS
Semiplumbeous Hawk	SEHA	Leucopternis semiplumbeus	LEUSEL*
Semper's Warbler	SEMW*	Leucopeza semperi	LEUSER*
Sepia-capped Flycatcher	SECF*	Leptopogon amaurocephalus	LEPAMA
Sharp-shinned Hawk	SSHA	Accipiter striatus	ACCSTR
Sharp-tailed Grouse	STGR	Tympanuchus phasianellus	TYMPHA

	Sharp-tailed Sandpiper	SPTS*	Calidris acuminata	CALACU
+	Sharp-tailed Sparrow	STSP	Ammodramus nelsoni/caudacut.	AMMNEC
	Sharp-tailed Streamcreeper	STST	Lochmias nematura	LOCNEM
	Sharpbill	SHAR	Oxyruncus cristatus	OXYCRI
	Shining Honeycreeper	SHHO	Cyanerpes lucidus	CYALUC
	Shiny Cowbird	SHCO	Molothrus bonariensis	MOLBON
	Short-billed Dowitcher	SBDO	Limnodromus griseus	LIMGRI
	Short-billed Pigeon	SBPI	Patagioenas nigrirostris	PATNIG*
	Short-crested Coquette	SCCO	Lophornis brachylophus	LOPBRA
	Short-eared Owl	SEOW	Asio flammeus	ASIFLA
	Short-tailed Albatross	STAL	Phoebastria albatrus	PHOALB
	Short-tailed Hawk	STHA	Buteo brachyurus	BUTBRA
	Short-tailed Nighthawk	SHTN*	Lurocalis semitorquatus	LURSEM
	Short-tailed Shearwater	SRTS*	Puffinus tenuirostris	PUFTEN
	Short-tailed Swift	STSW	Chaetura brachyura	CHABRA
	Shy Albatross	SHAL	Thalassarche cauta	THACAU
	Siberian Accentor	SIAC	Prunella montanella	PRUMON
	Siberian Blue Robin	SBRO	Luscinia cyane	LUSCYA
	Siberian Rubythroat	SIRU	Luscinia calliope	LUSCAL
	Sierra Madre Sparrow	SMSP	Xenospiza baileyi	XENBAI
	Silver-throated Tanager	STTA	Tangara icterocephala	TANICT
	Silvery-fronted Tapaculo	SFTA	Scytalopus argentifrons	SCYARG
	Silvery-throated Jay	STHJ*	Cyanolyca argentigula	CYAARG
	Sinaloa Crow	SICR	Corvus sinaloae	CORSIN
	Sinaloa Martin	SIMA	Progne sinaloae	PROSIN
	Sinaloa Wren	SIWR	Thryothorus sinaloa	THRSIN
	Singing Quail	SIQU	Dactylortyx thoracicus	DACTHO
	Sirystes	SIRY	Sirystes sibilator	SIRSIB
	Sky Lark	SKLA	Alauda arvensis	ALAARV
	Slate-colored Grosbeak	SCOG*	Saltator grossus	SALGRO
+	Slate-colored Junco	SCJU	Junco h. hyemalis	JUNHHY
	Slate-colored Seedeater	SCSE	Sporophila schistacea	SPOSCH
	Slate-colored Solitaire	SCSO	Myadestes unicolor	MYAUNI
	Slate-headed Tody-Flycatcher	SHTF	Poecilotriccus sylvia	POESYL
	Slate-throated Gnatcatcher	STGN	Polioptila schistaceigula	POLSCH
	Slate-throated Redstart	STRE	Myioborus miniatus	MYIMIN
	Slaty Antwren	SLAN	Myrmotherula schisticolor	MYRSCH
	Slaty Finch	SLFI	Haplospiza rustica	HAPRUS
	Slaty Flowerpiercer	SLFL	Diglossa plumbea	DIGPLU
	Slaty Spinetail	SLSP	Synallaxis brachyura	SYNBRA
	Slaty Vireo	SLVI	Vireo brevipennis	VIRBRE
	Slaty-backed Forest-Falcon	SBFF	Micrastur mirandollei	MICMIR
	Slaty-backed Gull	SBGU	Larus schistisagus	LARSCH
	Slaty-backed Nightingale-Thrush	SBNT	Catharus fuscater	CATFUT*
	Slaty-breasted Tinamou	SBTI	Crypturellus boucardi	CRYBOU
	Slaty-capped Flycatcher	SLCF*	Leptopogon superciliaris	LEPSUP
	Slaty-tailed Trogon	STTR	Trogon massena	TROMAS
	Slaty-winged Foliage-gleaner	SWFG	Philydor fuscipenne	PHIFUS
	Slender Sheartail	SLSH	Doricha enicura	DORENI
	Slender-billed Curlew	SBCU	Numenius tenuirostris	NUMTEN
	Slender-billed Grackle	SBGR	Quiscalus palustris	QUIPAL
	Slender-billed Kite	SBKI	Helicolestes hamatus	HELHAM
+	Small Canada Goose	SCGO	Branta c. parvipes	BRACPA
	Smew	SMEW	Mergellus albellus	MERALB
	Smith's Longspur	SMLO	Calcarius pictus	CALPIC
	Smoky-brown Woodpecker	SMBW*	Veniliornis fumigatus	VENFUM

	Smooth-billed Ani	SBAN	Crotophaga ani	CROANI
	Snail Kite	SNKI	Rostrhamus sociabilis	ROSSOC
	Snow Bunting	SNBU	Plectrophenax nivalis	PLENIV
	Snow Goose	SNGO	Chen caerulescens	CHECAE
+	Snow X Ross's Goose Hybrid	SRGH	Chen caerul. x rossii	CHECAR
	Snowcap	SNOC*	Microchera albocoronata	MICALB
	Snowy Cotinga	SNCO	Carpodectes nitidus	CARNIT
	Snowy Egret	SNEG	Egretta thula	EGRTHU
	Snowy Owl	SNOW	Bubo scandiacus	BUBSCA
	Snowy Plover	SNPL	Charadrius alexandrinus	CHAALE
	Snowy-bellied Hummingbird	SBEH*	Amazilia edward	AMAEDW
	Social Flycatcher	SOFL	Myiozetetes similis	MYISIM
	Socorro Dove	SODO	Zenaida graysoni	ZENGRA
	Socorro Mockingbird	SOMO	Mimus graysoni	MIMGRA
	Socorro Wren	SOCW*	Troglodytes sissonii	TROSIS
	Solitary Eagle	SOEA	Harpyhaliaetus solitarius	HARSOL
	Solitary Sandpiper	SOSA	Tringa solitaria	TRISOL
+	Solitary Vireo	SOVI	Vireo (sp)	VIRSPE
	Song Sparrow	SOSP	Melospiza melodia	MELMEL
	Song Thrush	SOTH*	Turdus philomelos	TURPHI
	Song Wren	SONW*	Cyphorhinus phaeocephalus	CYPPHA
	Sooty Grouse	SOGR	Dendragapus fuliginosus	DEGFUL*
	Sooty Shearwater	SOSH	Puffinus griseus	PUFGRI
	Sooty Tern	SOTE	Onychoprion fuscatus	ONYFUS
	Sooty Thrush	SOOT*	Turdus nigrescens	TURNIG
	Sooty-capped Bush-Tanager	SCBT	Chlorospingus pileatus	CHLPIL
	Sooty-faced Finch	SFFI	Arremon crassirostris	ARRCRA
	Sooty-headed Tyrannulet	SHTY	Phyllomyias griseiceps	PHYGRI
	Sooty-headed Wren	SHWR	Thryothorus spadix	THRSPA
	Sora	SORA	Porzana carolina	PORCAR
	South Polar Skua	SPSK	Stercorarius maccormicki	STEMAC
	Southern Beardless-Tyrannulet	SOBT	Camptostoma obsoletum	CAMOBS
	Southern Bentbill	SOBE	Oncostoma olivaceum	ONCOLI
+	Southern House-Wren	SOHW	Troglodytes a. musculus	TROAMU
	Southern Lapwing	SOLA	Vanellus chilensis	VANCHI
	Southern Martin	SOMA	Progne elegans	PROELE
	Southern Rough-winged Swallow	SRWS	Stelgidopteryx ruficollis	STERUF
+	Southwestern Willow Flycatcher	SWFL	Empidonax t. extimus	EMPTEX
	Spangle-cheeked Tanager	SCHT*	Tangara dowii	TANDOW
	Sparkling-tailed Hummingbird	SPTH*	Tilmatura dupontii	TILDUP
	Speckled Mourner	SPMO	Laniocera rufescens	LANRUF
	Speckled Tanager	SPTA	Tangara guttata	TANGUT
	Spectacled Eider	SPEI	Somateria fischeri	SOMFIS
	Spectacled Owl	SPEO*	Pulsatrix perspicillata	PULPER
	Spectacled Parrotlet	SPPA	Forpus conspicillatus	FORCON
	Spiny-faced Antshrike	SFAN	Xenornis setifrons	XENSET
	Spoon-billed Sandpiper	SBSA	Eurynorhynchus pygmeus	EURPYG
	Spot-breasted Oriole	SBOR	Icterus pectoralis	ICTPEC
	Spot-breasted Woodpecker	SBWP*	Colaptes punctigula	COLPUN
	Spot-breasted Wren	SBSW*	Thryothorus maculipectus	THRMAC
	Spot-crowned Antvireo	SPCA*	Dysithamnus puncticeps	DYSPUN
	Spot-crowned Barbet	SCBA	Capito maculicoronatus	CAPMAR*
	Spot-crowned Euphonia	SPCE*	Euphonia imitans	EUPIMI
	Spot-crowned Woodcreeper	SCRW*	Lepidocolaptes affinis	LEPAFF
	Spot-fronted Swift	SFSW	Cypseloides cherriei	CYPCHE
	Spot-tailed Nightjar	SPTN*	Caprimulgus maculicaudus	CAPMAD*

	Spotted Antbird	SPAN	Hylophylax naevioides	HYLNAE
	Spotted Barbtail	SPBA	Premnoplex brunnescens	PREBRU
	Spotted Crake	SPCR	Porzana porzana	PORPOR
	Spotted Dove	SPDO	Streptopelia chinensis	STRCHI
	Spotted Flycatcher	SPFL	Muscicapa striata	MUSSTR
	Spotted Nightingale-Thrush	SPNT	Catharus dryas	CATDRY
	Spotted Owl	SPOW	Strix occidentalis	STROCC
	Spotted Rail	SPRA	Pardirallus maculatus	PARMAS*
	Spotted Redshank	SPRE	Tringa erythropus	TRIERY
	Spotted Sandpiper	SPSA	Actitis macularius	ACTMAC
	Spotted Towhee	SPTO	Pipilo maculatus	PIPMAC
	Spotted Wood-Quail	SPQU	Odontophorus guttatus	ODOGUT
	Spotted Woodcreeper	SPWO	Xiphorhynchus erythropygius	XIPERY
	Spotted Wren	SPWR	Campylorhynchus gularis	CAMGUL
+	Spotted x Barred Owl Hybrid	SBOH	Strix occiden. x varia	STROCV
	Sprague's Pipit	SPPI	Anthus spragueii	ANTSPR
	Spruce Grouse	SPGR	Falcipennis canadensis	FALCAN
	Squirrel Cuckoo	SQCU	Piaya cayana	PIACAY
	St. Lucia Black Finch	SLBF	Melanospiza richardsoni	MELRIC
	St. Lucia Oriole	SLOR	Icterus laudabilis	ICTLAU
	St. Lucia Parrot	SLPA	Amazona versicolor	AMAVER
	St. Lucia Warbler	SLWA	Dendroica delicata	DENDEL
	St. Vincent Parrot	SVPA	Amazona guildingii	AMAGUI
	Steely-vented Hummingbird	SVHU	Amazilia saucerrottei	AMASAU
	Stejneger's Petrel	STPE	Pterodroma longirostris	PTELON
	Steller's Eider	STEI	Polysticta stelleri	POLSTE
	Steller's Jay	STJA	Cyanocitta stelleri	CYASTE
	Steller's Sea-Eagle	STSE	Haliaeetus pelagicus	HALPEL
	Stilt Sandpiper	STSA	Calidris himantopus	CALHIM
	Stolid Flycatcher	STOF*	Myiarchus stolidus	MYISTO
	Stonechat	STON	Saxicola torquatus	SAXTOR
	Straight-billed Woodcreeper	SGBW*	Xiphorhynchus picus	XIPPIC
	Streak-backed Oriole	SBAO*	Icterus pustulatus	ICTPUS
	Streak-breasted Treehunter	SBTR	Thripadectes rufobrunneus	THRRUB*
	Streak-chested Antpitta	SCHA*	Hylopezus perspicillatus	HYLPER
	Streak-crowned Antvireo	STCA*	Dysithamnus striaticeps	DYSSTR
	Streak-headed Woodcreeper	SHWO	Lepidocolaptes souleyetii	LEPSOU
	Streaked Flycatcher	STRF*	Myiodynastes maculatus	MYIMAC
	Streaked Saltator	SSAL*	Saltator striatipectus	SALSTR
	Streaked Shearwater	STRS*	Calonectris leucomelas	CALLEU
	Streaked Xenops	STXE	Xenops rutilans	XENRUT
	Streamertail	STRM*	Trochilus polytmus	TROPOL
	Striated Heron	STRH*	Butorides striata	BUTSTR
	Strickland's Woodpecker	STCW*	Picoides stricklandi	PICSTR
	Stripe-breasted Wren	SIBW*	Thryothorus thoracicus	THRTHO
	Stripe-cheeked Woodpecker	SCHW*	Piculus callopterus	PICCAL
	Stripe-headed Brush-Finch	SHBF	Arremon torquatus	ARRTOR
	Stripe-headed Sparrow	SHSP	Peucaea ruficauda	PEURUF
	Stripe-tailed Hummingbird	STLH*	Eupherusa eximia	EUPEXI
	Stripe-throated Hermit	SRTH*	Phaethornis striigularis	PHASTR
	Stripe-throated Wren	STWR	Thryothorus leucopogon	THRLEP*
	Striped Cuckoo	STCU	Tapera naevia	TAPNAE
	Striped Owl	STRO*	Pseudoscops clamator	PSECLA
	Striped Sparrow	SSPA*	Oriturus superciliosus	ORISUP
	Striped Woodhaunter	STPW*	Hyloctistes subulatus	HYLSUB
	Strong-billed Woodcreeper	SNBW*	Xiphocolaptes promeropirhynchus	XIPPRO

	Stub-tailed Spadebill	STTS*	Platyrinchus cancrominus	PLACAN
	Stygian Owl	STOW	Asio stygius	ASISTY
	Sulphur-bellied Flycatcher	SBFL	Myiodynastes luteiventris	MYILUT
	Sulphur-rumped Flycatcher	SRFL	Myiobius sulphureipygius	MYISUL
	Sulphur-rumped Tanager	SRTA	Heterospingus rubrifrons	HETRUB
	Sulphur-winged Parakeet	SWPA	Pyrrhura hoffmanni	PYRHOF
	Sumichrast's Wren	SUWR	Hylorchilus sumichrasti	HYLSUM
	Summer Tanager	SUTA	Piranga rubra	PIRRUB
	Sunbittern	SUNB	Eurypyga helias	EURHEL
	Sungrebe	SUNG	Heliornis fulica	HELFUL
	Surf Scoter	SUSC	Melanitta perspicillata	MELPER
	Surfbird	SURF	Aphriza virgata	APHVIR
+	Sutton's Warbler	SUWA	Parula amer. X P x domi.	PAMDDO
	Swainson's Hawk	SWHA	Buteo swainsoni	BUTSWA
	Swainson's Thrush	SWTH	Catharus ustulatus	CATUST
	Swainson's Warbler	SWWA	Limnothlypis swainsonii	LIMSWA
	Swallow Tanager	SWTA	Tersina viridis	TERVIR
	Swallow-tailed Gull	STGU	Creagrus furcatus	CREFUR
	Swallow-tailed Kite	STKI	Elanoides forficatus	ELAFOR
	Swamp Sparrow	SWSP	Melospiza georgiana	MELGEO
	Swinhoe's Storm-Petrel	SSTP	Oceanodroma monorhis	OCEMON
	Tacarcuna Bush-Tanager	TABT	Chlorospingus tacarcunae	CHLTAC
	Tacarcuna Tapaculo	TATA	Scytalopus panamensis	SCYPAN
	Tacarcuna Wood-Quail	TAWQ	Odontophorus dialeucos	ODODIA
	Taiga Bean-Goose	TABG	Anser fabalis	ANSFAB
	Taiga Flycatcher	TAFL	Ficedula albicilla	FICALB
	Tamaulipas Crow	TACR	Corvus imparatus	CORIMP
	Tamaulipas Pygmy-Owl	TAPO	Glaucidium sanchezi	GLASAN
	Tawny-breasted Flycatcher	TBFL	Myiobius villosus	MYIVIL
	Tawny-capped Euphonia	TCEU	Euphonia anneae	EUPANN
	Tawny-chested Flycatcher	TCFL	Aphanotriccus capitalis	APHCAP
	Tawny-collared Nightjar	TCNI	Caprimulgus salvini	CAPSAL
	Tawny-crested Tanager	TCTA	Tachyphonus delatrii	TACDEL
	Tawny-crowned Greenlet	TCGR	Hylophilus ochraceiceps	HYLOCH
	Tawny-faced Gnatwren	TFGN	Microbates cinereiventris	MICCIN
	Tawny-faced Quail	TFQU	Rhynchortyx cinctus	RHYCIN
	Tawny-shouldered Blackbird	TSBL	Agelaius humeralis	AGEHUM
	Tawny-throated Leaftosser	TTLE	Sclerurus mexicanus	SCLMEX
	Tawny-winged Woodcreeper	TWWO	Dendrocincla anabatina	DENANA
	Temminck's Stint	TEST	Calidris temminckii	CALTEM
	Tennessee Warbler	TEWA	Oreothlypis peregrina	OREPER
	Terek Sandpiper	TESA	Xenus cinereus	XENCIN
	Thayer's Gull	THGU	Larus thayeri	LARTHA
	Thick-billed Euphonia	TBEU	Euphonia laniirostris	EUPLAN
	Thick-billed Kingbird	TBKI	Tyrannus crassirostris	TYRCRA
	Thick-billed Murre	TBMU	Uria lomvia	URILOM
	Thick-billed Parrot	TBPA	Rhynchopsitta pachyrhyncha	RHYPAC
	Thick-billed Seed-Finch	TBSF	Oryzoborus funereus	ORYFUN
	Thick-billed Vireo	TBVI	Vireo crassirostris	VIRCRA
	Thicket Antpitta	THAN	Hylopezus dives	HYLDIV
	Thicket Tinamou	THTI	Crypturellus cinnamomeus	CRYCIN
	Three-striped Warbler	TSWA	Basileuterus tristriatus	BASTRI
	Three-wattled Bellbird	TWBE	Procnias tricarunculatus	PROTRI
	Thrush-like Schiffornis	TLSC	Schiffornis turdina	SCHTUR
	Timberline Wren	TIWR	Thryorchilus browni	THRBRO
	Tiny Hawk	TIHA	Accipiter superciliosus	ACCSUP

	Tody Motmot	TOMO	Hylomanes momotula	HYLMOM
	Tooth-billed Hummingbird	TBHU	Androdon aequatorialis	ANDAEQ
	Torrent Tyrannulet	TOTY	Serpophaga cinerea	SERCIN
	Townsend's Shearwater	TOSH	Puffinus auricularis	PUFAUR
	Townsend's Solitaire	TOSO	Myadestes townsendi	MYATOW
	Townsend's Warbler	TOWA	Dendroica townsendi	DENTOW
+	Townsend's x Hermit Warbler Hybrid	THWH	Dendroica townsendi x occi.	DENTOO
+	Traill's Flycatcher	TRFL	Empidonax alnorum/traillii	EMPALT
	Tree Pipit	TRPI	Anthus trivialis	ANTTRI
	Tree Swallow	TRES*	Tachycineta bicolor	TACBIC
	Tricolored Blackbird	TRBL	Agelaius tricolor	AGETRI
	Tricolored Heron	TRHE	Egretta tricolor	EGRTRI
	Tricolored Munia	TRMU	Lonchura malacca	LONMAC*
	Tristram's Storm-Petrel	TRSP	Oceanodroma tristrami	OCETRI
	Tropical Gnatcatcher	TRGN	Polioptila plumbea	POLPLU
	Tropical Kingbird	TRKI	Tyrannus melancholicus	TYRMEL
	Tropical Mockingbird	TRMO	Mimus gilvus	MIMGIL
	Tropical Parula	TRPA	Parula pitiayumi	PARPIT
	Tropical Pewee	TRPE	Contopus cinereus	CONCIN
	Tropical Screech-Owl	TRSO	Megascops choliba	MEGCHO
	Trumpeter Swan	TRUS*	Cygnus buccinator	CYGBUC
	Tufted Duck	TUDU	Aythya fuligula	AYTFUL
	Tufted Flycatcher	TUFL	Mitrephanes phaeocercus	MITPHA
	Tufted Jay	TUJA	Cyanocorax dickeyi	CYADIC
	Tufted Puffin	TUPU	Fratercula cirrhata	FRACIR
	Tufted Titmouse	TUTI	Baeolophus bicolor	BAEBIC
	Tundra Bean-Goose	TUBG	Anser serrirostris	ANSSER
	Tundra Swan	TUSW	Cygnus columbianus	CYGCOL
	Turkey Vulture	TUVU	Cathartes aura	CATAUA*
	Turquoise Cotinga	TUCO	Cotinga ridgwayi	COTRID
	Turquoise-browed Motmot	TBMO	Eumomota superciliosa	EUMSUP
	Tuxtla Quail-Dove	TUQD	Geotrygon carrikeri	GEOCAR
	Ula-ai-hawane	UAIH*	Ciridops anna	CIRANN
	Unicolored Jay	UNJA	Aphelocoma unicolor	APHUNI
+	Unidentified Accipiter Hawk	UAHA*	Accipiter (sp)	ACCSPE
+	Unidentified Bird	UNBI	Aves (gen, sp)	AVEGSP
+	Unidentified Blackbird	UNBL	Icteridae (gen, sp)	ICTGSP
+	Unidentified Carpodacus Finch	UCFI	Carpodacus (sp)	CARSPE
+	Unidentified Crow	UNCR	Corvus (sp)	CORSPE
+	Unidentified Dowitcher	UNDO	Limnodromus sp.	LIMSPE
+	Unidentified Duck	UNDU	Anatinae (gen, sp)	ANAGSP
+	Unidentified Empidonax Flycatcher	UEFL	Empidonax (sp)	EMPSPE
+	Unidentified Flycatcher	UNFL	Tyrannidae (gen, sp)	TYRGEN
+	Unidentified Hawk	UNHA	Accipitridae (gen, sp)	ACCGSP
+	Unidentified Hummingbird	UNHU	Trochilidae (gen, sp)	TRCGSP*
+	Unidentified Larus Gull	UNLG	Larus (sp)	LARSPE
+	Unidentified Owl	UNOW	Strigidae (gen, sp)	STRGSP
+	Unidentified Piranga Tanager	UPTA	Piranga (sp)	PIRSPE
+	Unidentified Poecile Chickadee	UPCH	Poecile (sp)	POESPE
+	Unidentified Sapsucker	UNSA	Sphyrapicus (sp)	SPHSPE
+	Unidentified Selasphorus Hummingbird	USHU	Selaphorus (sp)	SELSPS*
+	Unidentified Sparrow	UNSP	Emberizidae (gen, sp)	EMBGSP
+	Unidentified Swallow	UNSW	Hirundidae (gen, sp)	HIRGSP
+	Unidentified Teal	UNTE	Anas (sp)	ANASPE
+	Unidentified Thrush	UNTH	Turdidae (gen, sp)	TURGSP
+	Unidentified Warbler	UNWA	Parulidae (gen, sp)	PARGSP

+	Unidentified Woodpecker	UNWO	Picadae (gen, sp)	PICGSP
+	Unidentified Wren	UNWR	Troglodytidae (gen, sp)	TRGGSP*
	Uniform Crake	UNIC*	Amaurolimnas concolor	AMLCON*
	Unspotted Saw-whet Owl	USWO	Aegolius ridgwayi	AEGRID
	Upland Sandpiper	UPSA	Bartramia longicauda	BARLON
	Variable Seedeater	VASE	Sporophila americana	SPOAME
	Varied Bunting	VABU	Passerina versicolor	PASVER
	Varied Solitaire	VASO	Myadestes coloratus	MYACOL
	Varied Thrush	VATH	Ixoreus naevius	IXONAE
	Variegated Flycatcher	VAFL	Empidonomus varius	EMPVAR
	Vaux's Swift	VASW	Chaetura vauxi	CHAVAU
	Veery	VEER	Catharus fuscescens	CATFUN*
	Venezuelan Troupial	VETR	Icterus icterus	ICTICT
	Veraguan Mango	VEMA	Anthracothorax veraguensis	ANTVER
	Verdin	VERD	Auriparus flaviceps	AURFLA
	Vermiculated Screech-Owl	VESO	Megascops guatemalae	MEGGUA
	Vermilion Flycatcher	VEFL	Pyrocephalus rubinus	PYRRUB
	Vervain Hummingbird	VEHU	Mellisuga minima	MELMIN
	Vesper Sparrow	VESP	Pooecetes gramineus	POOGRA
	Village Weaver	VIWE	Ploceus cucullatus	PLOCUC
	Violaceous Quail-Dove	VIQD	Geotrygon violacea	GEOVIO
	Violet Sabrewing	VISA	Campylopterus hemileucurus	CAMHEM
	Violet-bellied Hummingbird	VBHU	Damophila julie	DAMJUL
	Violet-capped Hummingbird	VCAH*	Goldmania violiceps	GOLVIO
	Violet-crowned Hummingbird	VCHU	Amazilia violiceps	AMAVIO
	Violet-crowned Woodnymph	VCWO	Thalurania colombica	THACOL
	Violet-green Swallow	VGSW	Tachycineta thalassina	TACTHA
	Violet-headed Hummingbird	VHHU	Klais guimeti	KLAGUI
	Virginia Rail	VIRA	Rallus limicola	RALLIM
	Virginia's Warbler	VIWA	Oreothlypis virginiae	OREVIR
	Viridian Dacnis	VIDA	Dacnis viguieri	DACVIG
	Vitelline Warbler	VITW*	Dendroica vitellina	DENVIT
	Volcano Hummingbird	VOHU	Selasphorus flammula	SELFLA
	Volcano Junco	VOJU	Junco vulcani	JUNVUL
	Wandering Albatross	WAAL	Diomedea exulans	DIOEXU
	Wandering Tattler	WATA	Tringa incana	TRIINC
	Warbling Vireo	WAVI	Vireo gilvus	VIRGIL
	Wattled Jacana	WAJA	Jacana jacana	JACJAC
	Wedge-billed Woodcreeper	WBWO	Glyphorynchus spirurus	GLYSPI
	Wedge-rumped Storm-Petrel	WRSP	Oceanodroma tethys	OCETET
	Wedge-tailed Grass-Finch	WTGF	Emberizoides herbicola	EMBHER
	Wedge-tailed Sabrewing	WTSA	Campylopterus curvipennis	CAMCUR
	Wedge-tailed Shearwater	WTSH	Puffinus pacificus	PUFPAC
	West Indian Whistling-Duck	WIWD	Dendrocygna arborea	DENARB
	West Indian Woodpecker	WIWO	Melanerpes superciliaris	MELSUP
	West Mexican Chachalaca	WMCH	Ortalis poliocephala	ORTPOL
	Western Bluebird	WEBL	Sialia mexicana	SIAMEX
	Western Chat-Tanager	WECT	Calyptophilus tertius	CALTER
+	Western Flycatcher	WEFL	Empidonax difficilis/occid.	EMPDIO
	Western Grebe	WEGR	Aechmophorus occidentalis	AECOCC
	Western Gull	WEGU	Larus occidentalis	LAROCC
	Western Kingbird	WEKI	Tyrannus verticalis	TYRVER
	Western Marsh Harrier	WMHA	Circus aeruginosus	CIRAER
	Western Meadowlark	WEME	Sturnella neglecta	STUNEG
+	Western Palm Warbler	WPWA	Dendroica p. palmarum	DENPPA
	Western Reef-Heron	WERH	Egretta gularis	EGRGUL

	Western Sandpiper	WESA	Calidris mauri	CALMAU
	Western Screech-Owl	WESO	Megascops kennicottii	MEGKEN
	Western Scrub-Jay	WESJ	Aphelocoma californica	APHCAL
	Western Slaty-Antshrike	WSLA*	Thamnophilus atrinucha	THAATR
	Western Spindalis	WESP	Spindalis zena	SPIZEN
	Western Tanager	WETA	Piranga ludoviciana	PIRLUD
	Western Wood-Pewee	WEWP	Contopus sordidulus	CONSOR
+	Western X Glaucous-winged Gull Hybrid	WGWH	Larus occid. x gluaces.	LAROCG
+	Western X Mountain Bluebird Hybrid	WMBH	Sialia mex. x currucoid.	SIAMEC
	Whimbrel	WHIM	Numenius phaeopus	NUMPHA
	Whiskered Auklet	WHAU	Aethia pygmaea	AETPYG
	Whiskered Screech-Owl	WHSO	Megascops trichopsis	MEGTRI
	Whiskered Tern	WHST*	Chlidonias hybrida	CHLHYB
+	Whistling Swan	WHSW	Cygnus c. columbianus	CYGCCO
	Whistling Warbler	WHIW*	Catharopeza bishopi	CATBIS
	White Hawk	WHHA	Leucopternis albicollis	LEUALB
	White Ibis	WHIB	Eudocimus albus	EUDALB
	White Tern	WHTT*	Gygis alba	GYGALB
	White Wagtail	WHWA	Motacilla alba	MOTALB
	White-bellied Antbird	WBEA*	Myrmeciza longipes	MYRLON
	White-bellied Chachalaca	WBCH	Ortalis leucogastra	ORTLEU
	White-bellied Emerald	WBEM	Amazilia candida	AMACAN
	White-bellied Mountain-gem	WBMG	Lampornis hemileucus	LAMHEM
	White-bellied Wren	WBWR	Uropsila leucogastra	UROLEU
	White-breasted Nuthatch	WBNU	Sitta carolinensis	SITCAR
	White-breasted Thrasher	WBTH	Ramphocinclus brachyurus	RAMBRA
	White-breasted Wood-Wren	WBWW	Henicorhina leucosticta	HENLES*
	White-cheeked Pintail	WCHP*	Anas bahamensis	ANABAH
	White-chinned Swift	WCHS*	Cypseloides cryptus	CYPCRY
	White-chinned Thrush	WCTH	Turdus aurantius	TURAUR
	White-collared Manakin	WCOM*	Manacus candei	MANCAN
	White-collared Seedeater	WCSE	Sporophila torqueola	SPOTOR
	White-collared Swift	WCSW	Streptoprocne zonaris	STRZON
+	White-cr. X Golden-cr. Sparrow Hybrid	WGSH	Zonotrichia leuc. x atricap.	ZONLEA
	White-crested Coquette	WCCO	Lophornis adorabilis	LOPADO
	White-crested Elaenia	WCEL	Elaenia albiceps	ELAALB
	White-crowned Manakin	WCRM*	Pipra pipra	PIPPIP
	White-crowned Parrot	WCPA	Pionus senilis	PIOSEN
	White-crowned Pigeon	WCPI	Patagioenas leucocephala	PATLEU
	White-crowned Sparrow	WCSP	Zonotrichia leucophrys	ZONLEU
	White-eared Conebill	WECO	Conirostrum leucogenys	CONLEU
	White-eared Ground-Sparrow	WEGS	Melozone leucotis	MELLEU
	White-eared Hummingbird	WEHU	Hylocharis leucotis	HYLLEU
	White-eyed Thrush	WETH	Turdus jamaicensis	TURJAM
	White-eyed Vireo	WEVI	Vireo griseus	VIRGRI
	White-faced Ibis	WFIB	Plegadis chihi	PLECHI
	White-faced Quail-Dove	WFAQ*	Geotrygon albifacies	GEOALB
	White-faced Storm-Petrel	WFSP	Pelagodroma marina	PELMAR
	White-faced Whistling-Duck	WFWD	Dendrocygna viduata	DENVID
	White-flanked Antwren	WFLA*	Myrmotherula axillaris	MYRAXI
	White-fringed Antwren	WFRA*	Formicivora grisea	FORGRI
	White-fronted Nunbird	WFNU	Monasa morphoeus	MONMOR
	White-fronted Parrot	WFPA	Amazona albifrons	AMAALB
	White-fronted Quail-Dove	WFRQ*	Geotrygon leucometopia	GEOLEU
	White-fronted Swift	WFSW	Cypseloides storeri	CYPSTO
	White-headed Woodpecker	WHWO	Picoides albolarvatus	PICALB

	White-headed Wren	WHWR	Campylorhynchus albobrunneus	CAMALB
	White-lined Tanager	WLTA	Tachyphonus rufus	TACRUF
	White-lored Gnatcatcher	WLGN	Polioptila albiloris	POLALB
	White-naped Brush-Finch	WNBF	Atlapetes albinucha	ATLALB
	White-naped Swift	WNSW	Streptoprocne semicollaris	STRSEM
	White-necked Crow	WNCR	Corvus leucognaphalus	CORLEU
	White-necked Jacobin	WNJA	Florisuga mellivora	FLOMEL
	White-necked Petrel	WNPE	Pterodroma cervicalis	PTECER
	White-necked Puffbird	WNPU	Notharchus hyperrhynchus	NOTHYP
	White-ringed Flycatcher	WRFL	Conopias albovittatus	CONALB
	White-ruffed Manakin	WRMA	Corapipo altera	CORALT
	White-rumped Sandpiper	WRSA	Calidris fuscicollis	CALFUS
	White-rumped Shama	WRSH	Copsychus malabaricus	COPMAL
	White-shouldered Tanager	WSTA	Tachyphonus luctuosus	TACLUC
	White-striped Woodcreeper	WSWO	Lepidocolaptes leucogaster	LEPLEU
	White-tailed Eagle	WTEA	Haliaeetus albicilla	HALALB
	White-tailed Emerald	WTEM	Elvira chionura	ELVCHI
	White-tailed Hawk	WTHA	Buteo albicaudatus	BUTALC*
	White-tailed Hummingbird	WTAH*	Eupherusa poliocerca	EUPPOL
	White-tailed Kite	WTKI	Elanus leucurus	ELALEU
	White-tailed Nightjar	WTNI	Caprimulgus cayennensis	CAPCAY
	White-tailed Ptarmigan	WTPT	Lagopus leucura	LAGLEU
	White-tailed Trogon	WTAT*	Trogon chionurus	TROCHI
	White-tailed Tropicbird	WTTR	Phaethon lepturus	PHALEP
	White-thighed Swallow	WTGS*	Neochelidon tibialis	NEOTIB
	White-throated Crake	WTCR	Laterallus albigularis	LATALB
	White-throated Flycatcher	WTFL	Empidonax albigularis	EMPALB
	White-throated Jay	WTJA	Cyanolyca mirabilis	CYAMIR
	White-throated Magpie-Jay	WTMJ	Calocitta formosa	CALFOR
	White-throated Mountain-gem	WTMG	Lampornis castaneoventris	LAMCAS
	White-throated Needletail	WTNE	Hirundapus caudacutus	HIRCAU
	White-throated Shrike-Tanager	WTST	Lanio leucothorax	LANLEU
	White-throated Spadebill	WTRS*	Platyrinchus mystaceus	PLAMYS
	White-throated Sparrow	WTSP	Zonotrichia albicollis	ZONALB
	White-throated Swift	WTSW	Aeronautes saxatalis	AERSAX
	White-throated Thrush	WTTH	Turdus assimilis	TURASS
	White-throated Towhee	WTTO	Melozone albicollis	MELALB
	White-tipped Dove	WTDO	Leptotila verreauxi	LEPVER
	White-tipped Sicklebill	WTSI	Eutoxeres aquila	EUTAQU
	White-vented Euphonia	WVEU	Euphonia minuta	EUPMIN
	White-vented Plumeleteer	WVPL	Chalybura buffonii	CHABUF
	White-whiskered Puffbird	WWPU	Malacoptila panamensis	MALPAN
	White-winged Becard	WWBE	Pachyramphus polychopterus	PACPOL
	White-winged Crossbill	WWCR	Loxia leucoptera	LOXLEU
	White-winged Dove	WWDO	Zenaida asiatica	ZENASI
+	White-winged Junco	WWJU	Junco h. aikeni	JUNHAI
	White-winged Parakeet	WWPA	Brotogeris versicolurus	BROVER
	White-winged Scoter	WWSC	Melanitta fusca	METFUS*
	White-winged Tanager	WWTA	Piranga leucoptera	PIRLEU
	White-winged Tern	WWTE	Chlidonias leucopterus	CHLLEU
	White-winged Warbler	WWWA	Xenoligea montana	XENMON
	Whooper Swan	WHOS*	Cygnus cygnus	CYGCYG
	Whooping Crane	WHCR	Grus americana	GRUAME
	Wild Turkey	WITU	Meleagris gallopavo	MELGAL
	Willet	WILL	Tringa semipalmata	TRISEM
	Williamson's Sapsucker	WISA	Sphyrapicus thyroideus	SPHTHY

	Willow Flycatcher	WIFL	Empidonax traillii	EMPTRA
	Willow Ptarmigan	WIPT	Lagopus lagopus	LAGLAG
	Willow Warbler	WILW*	Phylloscopus trochilus	PHYTRO
	Wilson's Phalarope	WIPH	Phalaropus tricolor	PHATRI
	Wilson's Plover	WIPL	Charadrius wilsonia	CHAWIL
	Wilson's Snipe	WISN	Gallinago delicata	GALDEL
	Wilson's Storm-Petrel	WISP	Oceanites oceanicus	OCEOCE
	Wilson's Warbler	WIWA	Wilsonia pusilla	WILPUS
	Wine-throated Hummingbird	WTHH*	Atthis ellioti	ATTELL
	Wing-banded Antbird	WBAA*	Myrmornis torquata	MYRTOR
	Winter Wren	WIWR	Troglodytes hiemalis	TROHIE
	Wood Duck	WODU	Aix sponsa	AIXSPO
	Wood Sandpiper	WOSA	Tringa glareola	TRIGLA
	Wood Stork	WOST	Mycteria americana	MYCAME
	Wood Thrush	WOTH	Hylocichla mustelina	HYLMUS
	Wood Warbler	WOWA	Phylloscopus sibilatrix	PHYSIB
	Worm-eating Warbler	WEWA	Helmitheros vermivorum	HELVER
	Worthen's Sparrow	WOSP	Spizella wortheni	SPIWOR
	Wrenthrush	WRET*	Zeledonia coronata	ZELCOR
	Wrentit	WREN	Chamaea fasciata	CHAFAS
	Xantus's Hummingbird	XAHU	Hylocharis xantusii	HYLXAN
	Xantus's Murrelet	XAMU	Synthliboramphus hypoleucus	SYNHYP
	Yellow Bittern	YEBI	Ixobrychus sinensis	IXOSIN
	Yellow Grosbeak	YEGR	Pheucticus chrysopeplus	PHECHR
+	Yellow Palm Warbler	YPWA	Dendroica p. hypochrysea	DENPHY
	Yellow Rail	YERA	Coturnicops noveboracensis	COTNOV
	Yellow Tyrannulet	YETY	Capsiempis flaveola	CAPFLA
	Yellow Warbler	YWAR*	Dendroica petechia	DENPET
	Yellow-backed Oriole	YBOR	Icterus chrysater	ICTCHR
	Yellow-backed Tanager	YBTA	Hemithraupis flavicollis	HEMFLC*
	Yellow-bellied Elaenia	YBEL	Elaenia flavogaster	ELAFLA
	Yellow-bellied Flycatcher	YBFL	Empidonax flaviventris	EMPFLN*
	Yellow-bellied Sapsucker	YBSA	Sphyrapicus varius	SPHVAR
	Yellow-bellied Seedeater	YBSE	Sporophila nigricollis	SPONIG
	Yellow-bellied Siskin	YBSI	Spinus xanthogastrus	SPIXAN
	Yellow-bellied Tyrannulet	YBTY	Ornithion semiflavum	ORNSEM
	Yellow-billed Cacique	YBIC*	Amblycercus holosericeus	AMBHOL
	Yellow-billed Cardinal	YBCA	Paroaria capitata	PARCAP
	Yellow-billed Cotinga	YBCO	Carpodectes antoniae	CARANT
	Yellow-billed Cuckoo	YBCU	Coccyzus americanus	COCAME
	Yellow-billed Loon	YBLO	Gavia adamsii	GAVADA
	Yellow-billed Magpie	YBMA	Pica nuttalli	PIANUT*
	Yellow-billed Parrot	YBPA	Amazona collaria	AMACOL
	Yellow-billed Tern	YBTE	Sternula superciliaris	STESUP
	Yellow-breasted Bunting	YBSB*	Emberiza aureola	EMBAUR
	Yellow-breasted Chat	YBCH	Icteria virens	ICTVIR
	Yellow-breasted Crake	YBCR	Porzana flaviventer	PORFLN*
	Yellow-breasted Flycatcher	YBRF*	Tolmomyias flaviventris	TOLFLA
	Yellow-browed Bunting	YBWB*	Emberiza chrysophrys	EMBCHR
	Yellow-browed Shrike-Vireo	YBSV	Vireolanius eximius	VIREXI
	Yellow-browed Warbler	YBWA	Phylloscopus inornatus	PHYINO
	Yellow-collared Chlorophonia	YCCH	Chlorophonia flavirostris	CHLFLR*
	Yellow-crowned Bishop	YCBI	Euplectes afer	EUPAFE
	Yellow-crowned Euphonia	YCEU	Euphonia luteicapilla	EUPLUT
	Yellow-crowned Night-Heron	YCNH	Nyctanassa violacea	NYCVIO
	Yellow-crowned Parrot	YCPA	Amazona ochrocephala	AMAOCH

	Yellow-crowned Tyrannulet	YCTY	Tyrannulus elatus	TYRELA
	Yellow-eared Toucanet	YETO	Selenidera spectabilis	SELSPT*
	Yellow-eyed Junco	YEJU	Junco phaeonotus	JUNPHA
	Yellow-faced Grassquit	YFGR	Tiaris olivaceus	TIAOLI
	Yellow-footed Gull	YFGU	Larus livens	LARLIV
	Yellow-fronted Canary	YFCA	Serinus mozambicus	SERMOZ
	Yellow-green Finch	YGFI	Pselliophorus luteoviridis	PSELUT
	Yellow-green Grosbeak	YGGR	Caryothraustes canadensis	CARCAN
	Yellow-green Tyrannulet	YGTY	Phylloscartes flavovirens	PHYFLA
	Yellow-green Vireo	YGVI	Vireo flavoviridis	VIRFLD*
	Yellow-headed Blackbird	YHBL	Xanthocephalus xanthocephalus	XANXAN
	Yellow-headed Caracara	YHCA	Milvago chimachima	MILCHI
	Yellow-headed Parrot	YHPA	Amazona oratrix	AMAORA
	Yellow-headed Warbler	YHWA	Teretistris fernandinae	TERFER
	Yellow-hooded Blackbird	YHOB*	Chrysomus icterocephalus	CHRICT
	Yellow-legged Gull	YLGU	Larus michahellis	LARMIC
	Yellow-lored Parrot	YLPA	Amazona xantholora	AMAXAN
	Yellow-margined Flycatcher	YMFL	Tolmomyias assimilis	TOLASS
	Yellow-naped Parrot	YNPA	Amazona auropalliata	AMAAUR
	Yellow-nosed Albatross	YNAL	Thalassarche chlororhynchos	THACHL
	Yellow-olive Flycatcher	YOFL	Tolmomyias sulphurescens	TOLSUL
	Yellow-rumped Cacique	YRCA	Cacicus cela	CACCEL
	Yellow-rumped Warbler	YRWA	Dendroica coronata	DENCOR
+	Yellow-shafted Flicker	YSFL	Colaptes a. auratus	COLAAU
	Yellow-shouldered Blackbird	YSBL	Agelaius xanthomus	AGEXAN
	Yellow-shouldered Grassquit	YSGR	Loxipasser anoxanthus	LOXANO
	Yellow-tailed Oriole	YTOR	Icterus mesomelas	ICTMES
	Yellow-thighed Finch	YTFI	Pselliophorus tibialis	PSETIB
	Yellow-throated Bunting	YTBU	Emberiza elegans	EMBELE
	Yellow-throated Bush-Tanager	YTBT	Chlorospingus flavigularis	CHLFLG*
	Yellow-throated Euphonia	YTEU	Euphonia hirundinacea	EUPHIR
	Yellow-throated Vireo	YTVI	Vireo flavifrons	VIRFLF*
	Yellow-throated Warbler	YTWA	Dendroica dominica	DENDOM
	Yellow-winged Cacique	YWCA	Cacicus melanicterus	CACMEL
	Yellow-winged Tanager	YWTA	Thraupis abbas	THRABB
	Yellow-winged Vireo	YWVI	Vireo carmioli	VIRCAM*
	Yellowish Flycatcher	YEFL	Empidonax flavescens	EMPFLS*
	Yellowish Pipit	YEPI	Anthus lutescens	ANTLUT
	Yucatan Flycatcher	YUFL	Myiarchus yucatanensis	MYIYUC
	Yucatan Jay	YUJA	Cyanocorax yucatanicus	CYAYUC
	Yucatan Nightjar	YUNI	Caprimulgus badius	CAPBAD
	Yucatan Poorwill	YUPO	Nyctiphrynus yucatanicus	NYCYUC
	Yucatan Vireo	YUVI	Vireo magister	VIRMAG
	Yucatan Woodpecker	YUWO	Melanerpes pygmaeus	MELPYG
	Yucatan Wren	YUWR	Campylorhynchus yucatanicus	CAMYUC
	Zapata Rail	ZARA	Cyanolimnas cerverai	CYACER
	Zapata Sparrow	ZASP	Torreornis inexpectata	TORINE
	Zapata Wren	ZAWR	Ferminia cerverai	FERCER
	Zebra Dove	ZEBD*	Geopelia striata	GEOSTR
	Zenaida Dove	ZEND*	Zenaida aurita	ZENAUT*
	Zone-tailed Hawk	ZTHA	Buteo albonotatus	BUTALN*

Appendix XI – Comments and Responses from the Draft Final Review period

Comments Received Regarding the Draft Final Lower Buffalo River Wildlife Survey Report
Comments are in BLACK and Responses are in BLUE

Comment 1 - indicate which birds are residents versus migrants, and perhaps some indication of habitat preferences (water, shore, upland, yadda yadda).

Response 1 – While this report is intended to provide an inventory of observed fauna within the study area, it is not intended to serve as a field guide nor a life history text of the observed species. Best efforts to provide general habitat distinctions are made, but note this is above and beyond the scope of work for this project

Comment 2 - On Page 17, there is Figure 12. It does not have the X and Y axes labeled

Response 1 – X and Y axes have been labeled

Comment 3 - I am wondering if Figures 12 and 13 would be better as bar graphs? It seems to me they are showing counts are discrete locations and the lines were a bit confusing to me at first. I understand if that was done to add some variety, since most of the graphs are bar graphs.

Response 1 – All graphs have been changed to bar graphs as to not suggest a correlative relationship.

Comment 4 - In Figure 12, there are only 15 locations shown and I thought there were 20 total? I guess I was a bit confused by those images.

Response 1 – Figure 12 depicts the 15 study area sites (within the AOC) and excludes the 5 'reference area' sites (located outside of the AOC). The revised graphs should be more explicit in this regard.

Comment 5 - Is there a list in the report showing the names that each numbered location would correspond to? It might be helpful to have that in the report before the graphs start.

Response 1 – Yes, this list is located in Table 1 (pg 9). Due to confusion, all graphs will be changed to reflect the site ID # and name. Please reference Table 1 to understand the site #/name relationships.

Comment 6 - In figures 12, 13, and 18, "Series 1" is on the side of the graphs. It seems unnecessary.

Response 1 – Agreed. This has been removed.

Comment 7 - Around page 43 is Map 4 In the legend, “Time and Area Constrained Search” appears to be a yellow line. It was hard to see on my screen and might be better if it was shaded to look more like the yellow shaded areas on the map.

Response 1 – The color and intensity of the legend icon and the map polygons are identical.

Comment 8 - I'm assuming that BNR will get copies of all of the raw field data sheets so you can refer to them in the future if needed.

Response 1 – The original/raw data sheets are within the final submission as Appendix VIII

Comment 9 - Bats seem to given an unusual amount of attention compared to other species. More than 4 pages are devoted to bats. All other species are discussed in a few sentences or paragraphs. The report should explain if there is a reason for this special emphasis.

Response 1 – We had an AES bat biologist conduct the bat effort and they provided a supplemental report. Within the bat section we said we’d provide a habitat assessment, hence the added information. Effort was well distributed, however, between survey efforts. Within those 4 pages are sonogram results, something unique to bats which have no counterpart in other target mammal fauna.

Based upon this comment and the fact that bats do seem to get extra attention, I have added more general information where relevant regarding other mammal species in an attempt to offset your concern.

Comment 10 - Mink, a key ecosystem indicator species, is only mentioned once in a table. The table notes burrows and tracks along naturalized shorelines. Mink are not mentioned in the conclusion's mammal discussion. The observation of mink tracks and burrows is an important one and should be expanded on.

Response 1 –Observation details regarding the mink tracks/burrow has been included in discussion and conclusion section

Comment 11 - are there other lines of evidence such as reports of mink road kill and the need to control mink in certain areas through trapping that could be mentioned here?

Response 1 – DOR/road-killed mink were not observed. Additionally, no observations suggested an overpopulation of mink which would require considering trapping or other population control measures.

Comment 12 - The presence of the spiny soft shell turtle in the AOC which appears to be a sensitive species should be discussed at bit more. Few specifics are provided.

Response 1 – Details are provided in the report about the species' natural history, its local population declines, the exact location of observed individuals within the AOC, and the fact that NYSDEC is currently conducting radiotelemetry to further understand the current population dynamics. I'm not sure what additional detail you are requesting. This is a one year study using non-invasive, general methods to determine presence/absence of target fauna. The species was confirmed present in the AOC. Its presence denotes a certain level of water quality and may imply the presence of or need for suitable nesting and overwintering habitat. Any other information would require a more detailed analysis, such as the study currently ongoing by NYSDEC. Ken Roblee, NYSDEC Buffalo Office Herpetologist, could provide additional detail.

Comment 13 – The presence of mink and the spiny soft shell turtle within the AOC is a very good sign. I'd suggest adding a more detailed focused discussions of mink, spiny soft shell turtle, any resident breeding birds that AES considers potential good AOC indicators, and any other candidate indicator species. This would greatly assist the RAP in defining a delisting process for the wildlife related BUIs.

Response 1 – Good suggestion. Additional detail has been added in the discussion section to better represent this fact. We have also added a table of suggested AOC indicator bird species.

Comment 14 – The QAPP states that one reference location would be located. The report states that five locations outside the AOC were selected. Are all 5 of these locations reference sites, or is there only one reference site defined?

Response 1 – There is one reference location (Seneca Bluffs) with 4 sample points. An additional point was taken at coastal Lake Erie to document the immediately adjacent fauna to the west since we feel this data is important to have and may aid in future decisions regarding wildlife populations and/or habitat types to consider during restoration activity. Detail has been added in the Methods and Materials section to clarify.

Comment 15 - The report does not seem to clearly address the issue of reference sites. The report should include a focused discussion on how reference locations were selected.

Response 1 – Detail was added in the Methods and materials section of the report

Comment 16 - The discussion section should describe how AOC populations compare with the reference sites.

Response 1 – Detail regarding this was added to the4 Discussion section

Comment 17 - Figures should compare AOC data to reference sites whenever possible.

Response 1 – A figure was added in the discussion section comparing comparably sized reference and study area habitat types. Another table (Table 7) was added to compare diversity of breeding and migratory bird species within the AOC, reference area, and total potential for the region by habitat type.

Comment 18 – Recommendations should consider any reference site issues related to their use in the delisting process.

Response 1 –Statements were added in the discussion and conclusion sections as to how recommendations may serve the delisting process.

Comment 19 – The identification of appropriate reference sites that could be considered by the RAP would be a major achievement and contribute to the BUI delisting process.

Response 1 – This continues to be a difficult achievement. A true reference site should reflect pre-settlement ecological conditions and autogenic ecological processes. Stakeholders may want to clearly define the parameters of a reference area for the AOC which aligns with realistic goals. In this regard, the selected reference area (Seneca Bluffs) may be appropriate.

Comment 20 – Suggest reconsidering the report recommendation with a focus on identifying AOC wildlife indicator species for delisting purposes, suggested improvements to monitoring approaches, and consideration of future monitoring approaches as it relates to planned GLLA work with an aim to document restoration progress.

Response 1 – A table of proposed AOC indicator species was included to be more specific regarding potential delisting criteria goals. All future restoration activities should be aligned with performance standards, of which faunal metrics are integral. The level of detail to project restoration projects for specific parcels within the AOC and then develop faunal benchmarks is above and beyond the scope of this project.

Comment 21 – Most of the habitat restoration recommendations presented do not add any value above and beyond existing AOC habitat restoration plans.

Response 1 – All restoration recommendations were related directly to the observations of the survey team during data collection and the resultant analysis. Should these be redundant with existing plans, this is coincidental and reflects/encourages that current restoration plans are appropriate. A critical analysis of restoration opportunities is more aligned with a master plan, wildlife habitat management plan, or restoration planning project, all of which are outside of the scope of work for this project.

Comment 22 – If specific habitat recommendations are included they should include a description of why it is needed and which species these actions would benefit.

Response 1 – Recommendations were offered outside the scope of this project which was to conduct a wildlife survey and provide a data report. However, we will add some general notes to address this comment.

Comment 23 - Suggest replacing the terms "on site" and "off-site" with "study area" and "reference site". In places it can be unclear if the term "on site" is referring to a specific monitoring station or location or the entire AOC study area.

Response 1 – These changes have been made throughout the report

Comment 24 – Does the term "outside the AOC" refer to the reference site when used in discussing sightings?

Response 1 – Yes. Per Comment 23, this has been clarified in the text by changing "outside the AOC" to "reference sites"

Comment 25 – Tables and charts should use station names and common names rather than station numbers and Latin species names in order to make these displays more readily understandable.

Response 1 – These changes have been made in all tables and charts

Comment 26 – Introduction, 2nd paragraph

a- The end of this paragraph could note that with the decline of industrial manufacturing in the AOC many industrial sites are now abandoned and are now available for recolonization by plants and animals to various degrees.

Response 1 – Proposed verbiage was included

b- The meaning of the last sentence is unclear. The word "pretense" does not seem to make sense in this context.

Response 1 – Agreed. It was changed to 'conditions' which should now read more clearly.

c- Suggest ending this section with a brief paragraph describing the signing of the amended GLWQA of 1987 that called for the establishment of the Buffalo River AOC.

Response 1 – The suggested verbiage was included

d- Reference could be made to the millions of dollars on habitat and green infrastructure projects currently underway that promise to greatly restore the AOC's ecosystem.

Response 1 – The above language was added into the report

e- Special mention should be made of the GLLA plans and related shoreline restoration project.

Response 1 – We added a brief reference in the Project background section. If you would like to share additional/suggested language which you feel is important to add, please do so and we will be happy to incorporate.

f- You could move and revise as needed the 2nd paragraph of the following section.

Response 1 – Changes were made to conform to new information from above comments

Comment 27 – Page 4. Section 1.1, You could provide the delisting criteria for the mentioned BUIs.

Response 1 – We added the delisting criteria for the relevant BUI's as listed on the International Joint Commission's website.

Comment 28 - Page 4. Section 1.1, 3rd paragraph

a- Suggest removing the first sentence. It seems a bit presumptuous to state that this is the first study to have collected scientifically valid data. You may unintentionally offend someone. Perhaps its true but its seems that you would have to present a fairly systematic review of all previous studies.

Response 1 – The intention is not to criticize nor suggest a critical review of existing studies, but to make clear that this is the first ever vertebrate inventory which has been intentionally aligned with the goals and efforts associated with the Buffalo River AOC as one unit. It's not commenting on other studies' scientific validity in general, just as they relate to the efforts within the AOC that are stated in the paragraphs above it framing the Project Background.

Since this is seemingly ambiguous in the text, I have slightly altered the verbiage to be clear about the fact that this current baseline study is necessary to generate any statistical validity for monitoring target wildlife (birds, herps, & mammals) populations in the AOC moving forward since nothing comparable currently exists.

b- No mention is made of some studies that appear to have used systematic, repeatable approaches such as the Bird Studies Canada Marsh Monitoring Program (MMP), http://www.dec.ny.gov/docs/regions_pdf/marshassess.pdf

Response 1 – There is reference to the MMP and NAAMP in the methods section. These are referenced in the survey methods since we decided to use the same methods for several reasons: 1) they have been previously implemented within the AOC (though not under an AOC-wide study design); 2) they are widely accepted (bi-nationally) for comparative capabilities and we have used these same methods for amphibian monitoring studies throughout the United States; and 3) they are systematic and repeatable.

c- This raises questions on how comprehensive a review of previous studies was made.

Response 1 – While we were not tasked to perform a comprehensive review of previous studies, we did review previous data during survey design. We reviewed what previous/existing faunal data were provided by BNR to learn about the existing natural areas in the AOC, define access, and to overlap survey points where possible as to potentially retroactively include these previous studies into the pool of comparable data moving forward.

It appears that Comments 28 a-c may reflect a misunderstanding about the intentions of the sentence referenced in Comment 28a. For clarification, at no time was there a comprehensive review of previous studies. This was not a part of the contracted project. Therefore, no statements were made regarding the performance of or methods used in these studies. The 'scientific validity' referenced in the report is in direct relation to the Buffalo River AOC baseline data pool. No previous data set may be considered for this qualification and therefore previous data sets offer little regarding future statistical data analysis of wildlife populations over time within the AOC moving forward. I have re-worded the section to avoid this confusion moving forward.

d- The bottom of Page 6 seems to contradict these statements saying that this project used the same protocols as the MMP.

Response 1 –After reading the above responses and reviewing the correlative changes made in the report, this should make more sense. If not, please contact me directly to discuss further (Michael McGraw @ 610-238-9088). Thanks.

e- Perhaps it would be best to drop the first two sentences

Response 1 – The report has been reworded to recognize previous survey efforts and credit the cited reports. In fact, The report also highlights the subtle, yet important distinction between the current study and previous efforts, which is that this current study directly aligns with future visioning for a systematic vertebrate monitoring program, allowing scientists, regulators, and policy makers to quantify changes in target fauna populations over time in response to changes in the AOC, specifically ecological restoration and enhancement projects under GLLA plans.

Comment 29 – Section 1.3. First sentence - You could clarify that the purpose of the QAPP is to help ensure that the data collected would be well documented and scientifically valid.

Response 1 – I added this to Section 1.3

Comment 30 - Do bats utilize abandoned industrial structures in the AOC?

Response 1 – Due to property rights and trespassing laws, we were not able to access any abandoned buildings within the AOC for bat or other faunal surveys. It is a highly reasonable assumption that bats utilize abandoned buildings within the AOC. European studies have shown that some bat species regularly choose human constructions over available tree roosting sites (Mazurska and Ruczynski 2008). Several U.S. studies have also found that large, abandoned buildings taller than surrounding structures providing warm, stable internal temperatures create ideal day and night bat roosting areas (Mazurska and Ruczynski 2008; Rhodes and Johnson 2006; Entwistle et al. 1997; Mager and Nelson 2001; Neubaum et al. 2007; Vander Pol 2012). Whether day, night, maternal, migratory roosts, or all exist is uncertain without further investigation. In addition, local accounts claim that large bat roosts exist under broken concrete slabs along Coastal Lake Erie (outside of, but near the AOC).

Entwistle, A. C., Racey, P. A., and Speakman, J. R. 1997. Roost selection by the brown long-eared bat *Plecotus auritus*. *Journal of Applied Ecology* 34:399-408

Mager, K. J. and Nelson, T. A. 2001. Roost-site selection by eastern red bats (*Lasiurus borealis)*. *The American Midland Naturalist* 145:120-126

Mazurska, K. and Ruczynski, I. 2008. Bats select buildings in clearings in Bialowieza Primeval Forest. *Acta Chiropterologica* 10:331-338

Neubaum, D. J., Wilson, K. R., and O'Shea, T. J. 2007. Urban maternity-roost selection by big brown bats in Colorado. *Journal of Wildlife Management* 71:728-736

Rhodes, M. and Wardel-Johnson, G. 2006. Roost tree characteristics determine use by the white-striped freetail bat (*Tadarida australis*, Chiroptera: Molossidae) in suburban subtropical Brisbane, Australia. *Austral Ecology* 31:228-239

Vander Pol, R. S. 2012. Characteristics of urban constructions occupied by bats. Thesis, Baylor University, TX.

Comment 31 – Page 8. Section 3.1 - Habitat Descriptions

a- It might be helpful to provide a map that shows the approximate distribution of the various habitat types that are discussed.

Response 1 – Agreed. While we were not contracted to map distribution of habitat types we did decide to add an additional level of habitat information to aid understanding the AOC as a whole.

b- Can you provide an approximate acreage size of each of the specific stations described?

Response 1 – I'm not sure what you are asking for. I assume "specific stations" to mean survey points. A "specific station" may refer to a variety of survey method execution.
For example,

- An unlimited distance point count station can safely be considered a point with a minimum of a 500 foot radius in good conditions (buildings and other obstructions limit this as well as weather conditions and ambient noise).
- A transect search basically covers 10-20 feet on either side of a predetermined line.
- A Time Constrained Search uses spatial polygons, these can be quantified in acreage if needed
- A trap array is limited to the exact location where it may catch an animal

  Since this comment is within the Habitat Descriptions section, perhaps you mean approximate acreage of each habitat type observed? This is not within the scope of the project. This would require a detailed ecological community mapping project.

  c- Do size differences make it difficult to compare diversity and abundance for some species?

Response 1 – We would require clarification to fully answer this question. If we assume "size differences" means differences in patch size/acreage of different habitat types where the survey points are taken then the response is as follows.

Variation in abundance of some species can be directly affected by size difference of preferred habitats and adjacent habitat types. The ability to compare these is a function of a standardized method. Regardless of the variation in habitat size, species diversity, or species abundance if the data collection method is identical, the data are comparable. In fact, the goal of a survey like this is to identify abundance and diversity at different locations which, naturally, will consist of different sized habitats.

The purpose of this study was to generate a baseline data set. There are limited comparative capabilities with only the first year of data. These are observed facts which can be later compared to repeated survey efforts over time.

If there were tracts of forest or land which we couldn't visit comprehensively then documenting and comparing diversity would be an issue. Total AOC documented vertebrate fauna diversity may be impacted by lack of access to CSX and other sites within the AOC (potential to increase the diversity of documented fauna). When comparing study area sites to reference site, yes, the patch size of a particular reference habitat should be as close to the size and shape of your intended goals for the study area to best reflect realistic target faunal diversity and abundance goals. This is a very difficult feat. Comparable size and habitat type between reference and study area floodplain forests is available in this report.

For point count surveys, we collect a representative sample of bird populations (diversity and abundance) within an area. Therefore, when you view a bar graph showing the "species richness per location", this reflects the point, not the space in its entirety. "Size difference" does impact both abundance and diversity within compared locations, but this variable should be reflected in the standardized data collection method. For example, if we have two identical grasslands (same soils, floral species composition, adjacent habitat types, aspect, topography, etc) but one is 10 acres and the other is 100 acres, it is likely that point count results from concurrent survey efforts will result in different results regarding species richness and overall abundance. However, the responses to size may be greatly different depending upon the species.
Here are just a few of the potential responses by birds which may affect changes in abundance and diversity at a site from a change in size:

- Some grassland birds will simply not breed in patches smaller than a certain acreage.
- In response to a smaller available habitat type, some species will defend smaller/tighter home ranges, provided there is adequate food and nesting structure (resulting in a sample which reflects a higher abundance)
- Edge effect will greatly affect diversity documented. In the center of a 100 acre grassland you are less likely to observe birds which inhabit other habitats. In a 10 acre grassland parcel, you may document representatives from a pool of grassland-breeding bird species, but also document forest edge and some interior forest species (depending on acoustic conditions)
- Predation is affected by "size differences" and may alter the diversity and abundance of species

The abundance data in this report is comparable because it is gathered using the same method at sampling station/point, regardless of the difference in size of the habitat types surrounding it. For survey repeatability purposes, this is why it is important to note secondary habitat types (see Table 1) as to account for patch size to some extent and (moreso) to ensure that habitat heterogeneity at a point is standardized when considering both abundance and diversity.

d- Species presence and abundance can be related to the size of a habitat. Even rough size approximations would be useful.

Response 1 – General approximations of overall acreages are now provided in the discussion section as well as some example comparative analyses between similarly sized reference and study area floodplain forest and old field habitats.

The survey methods standardize the size of the sampled area. Any changes in bird abundance or diversity as a result of habitat size will be reflective in the data. While we did not have the budget or scope to develop habitat community maps, the maps provided have scale bars and this level of analysis will be possible by those interested in doing so.

Comment 32 - Page 8, 3rd paragraph, last sentence - The wording is not quite right and could be reconsidered. "find true value" and "serve as a catalyst" in particular don't quite seem to work. I think it is trying to say that Only experienced biologists are able, or should, conduct opportunistic searches. Maybe try and state this in a more straightforward way.

Response 1 – Changes were made to this statement

Comment 33 – Page 9, Section 3.1, Habitat Descriptions

- Table 1 should distinguish between "onsite" and "offsite" locations.

Response 1 – We color-coded them to reflect this

- Clarify if the 5 "offsite" locations be considered to be "reference" or "control" sites?

Response 1 – All "offsite" descriptions were changed to "reference" to clarify

Comment 34 – Page 14 Suggest removing the first two sentences

Response 1 – Not quite sure why these should be removed… The intention is to inform readers that these wetlands are emerging from non-natural conditions and are primarily fed by precipitation but may have some groundwater connections (difficult to assess in non-natural settings, especially when an ecological assessment is above and beyond the scope of the project).

Comment 35 – Page 15, Figures 12 through 14 –

- Should use bars to show numbers from site to site not a connecting line. The connecting line suggests that there is some connection between points.

Response 1 – This has been changed.

- differences in habitat types may explain differences.

Response 1 – Yes. This statement is true, but vague. We are not sure what exactly is being commented on.

- Rather than station numbers use place names to make it easier for the reader to follow.

Response 1 – This has been changed (see all relevant Graphs)

- Stations could be grouped by habitat type to make comparisons easier

Response 1 – We do not feel as if the level of effort to re-group the survey points will provide additional value. The raw data and basic summaries are present in the report and can provide an interested reader (or future surveyor) with the tools to make such a comparison.

Comment 36 – Page 16, Table 2 -

- Should clarify how "Breeding?" was evaluated.

Response 1 – A link was provided in the Methods section to the NYSDEC NYBBS Observation Codes. On this page it describes how to classify behavioral observations.

- The QAPP did not describe a process for how breeding would be identified.

Response 1 – This is a standardized method which has been implemented nationally by USGS, with modifications made per state for respective Breeding Bird Surveys. This methodology was referenced within the QAPP. We used the NY state-modified version for this report, as detailed in the methods section of the report.

- Need to be careful that this is not interpreted by some readers to mean that breeding is definitely not occurring within the AOC due to some environmental factors.

Response 1 – Agreed. We cannot state that some birds are not breeding within the AOC due to "some environmental factors". In fact, the very nature of site selection by animals for breeding and other critical life history activity is driven by environmental factors within a given area (biotic and abiotic). To make a claim such as this, a significantly more detailed study would be required and would likely be irrelevant to the goal of this project. By documenting what is currently present and what those animals are doing (migrating, breeding, wintering, etc), we can paint a picture over time as to how the animals are responding to onsite conditions, rather than attempt to correlate very specific interactions between a particular species/individuals and its/their response to the myriad environmental factors within an ecosystem.

- I would guess this is based on observed mating behaviors?

Response 1 – Yes. There is a temporal and behavioral codification system for every species in the continental United States. It takes considerable field experience and a depth of knowledge regarding geographic location and life history information of ALL bird species within a given geographic location. For example, if we observed a male common yellowthroat singing from a territory within suitable habitat on repeated site visits from May through to July, this is considered 'probable breeding' (this animal has deemed it worthwhile to defend this territory through the breeding season, suggesting that he likely has a mate, has engaged in copulation and nesting behavior, and is defending an area with adequate nesting structure and foraging resources). If we observe a female indigo bunting carrying a fecal sack in late June, this is 'confirmed breeding' behavior (this mother must have young chicks in the nest nearby).

- Do the on-site/offsite terms mean the same as study area/reference site?

Response 1 – Yes, clarifications have been made regarding this.

Comment 37 – Page 16 bottom of page –

- comparative bird assessment - Doesn't the habitat type need to be considered when comparing results from these locations.

Response 1 – Not when comparing the data collected per survey point to observe overall richness and abundance. This is an issue when comparing to any "reference" conditions and if it is decided to compare the performance of one tract of a certain habitat within the AOC to another tract of the same habitat type within the AOC. The comparative assessment in the report is simply the observed diversity and abundance at each survey point (where identical methods were employed). This is a means to assess where current biodiversity and general distribution of animals within the AOC are. Once post-baseline data is gathered, the data will then be afforded a more critical analysis where habitat type will be an important variable. If one was really interested in the diversity and abundance of animals observed within two different locations which share the same habitat classifications, they may do so in a rudimentary fashion with the provided data. This is not only outside of the scope of work for this preliminary data collection effort, but will provide minimal value until the factor of time is included and restoration goals are aligned for specific locations.

- Would it make sense to group them by habitat type, color coded?

Response 1 – Lumping species by habitat types may provide insight for very selective species. It is assumptive for most other species including adaptive/generalist species.

Comment 38 - Page 17 - bottom of page - Use of the word "speciose" may not be reader friendly.

Response 1 – "Speciose" is the most appropriate word to use here to specify the biological "richness", or diversity of species within a location (Hart 2008). If you feel strongly against using this word we can provide a synonym, but prefer to keep it in.

Hart, Michael W. 2008. Speciose versus species-rich. *Trends in Ecology & Evolution*, **23 (12)**:660-661
doi:10.1016/j.tree.2008.09.001

Comment 39 – Section 4.1, 1st paragraph, last sentence - Should acknowledge the beneficial impact that planned GLLA dredging and restoration projects will have on the ecosystem.

Response 1 – Agreed. We have added a sentence to reflect this.

Comment 40 – Section 4.2 - Avia –

- The discussion would be more helpful for AOC BUI purposes if it described resident birds that reproduce in the AOC.

Response 1 – I have added a section and two additional Tables (7&8) to address this comment.

- Transients migrating through the AOC, although of interest, do not necessarily reflect AOC conditions.

Response 1 – We agree that transients do not tell us much. Therefore, we have added additional detail in the discussion section as to not over-emphasize transient observations.

To be clear, we do know that migrants reflect AOC conditions and are an important part of this study. Transients are defined differently and tell us less about the conditions of the site, but rather raise questions about how and why the animal is there. Migration has been widely (globally) accepted as a critical phase of literally billions of birds every year, twice a year. Without adequate stopover habitat which provides adequate food, shelter, and clean water entire populations can be decimated. The red knot migration stopover in the Delaware Bayshore area of southwestern New Jersey is a fine example (this species almost went extinct due to the habitat/ecological conditions at migratory stopover sites). Although the fall-out/results of poor migratory habitat conditions typically do not play out at the site (birds die elsewhere as they move on in poor physical condition), population trends over subsequent years tell the story. It is critical to the BUI delisting process to provide adequate migratory stopover habitat for neo-tropical and temporal migrant songbirds, raptors, and waterfowl. Additionally, a great potential exists to improve conditions for migrant waterfowl and shorebirds as shoreline restoration, submergent aquatic vegetation, shallow water wetland restoration/creation, and emergent marsh wetland restoration activities are planned and implemented. The site's geographic location deems it in an important migratory pathway for breeding birds of central, eastern, and to some extent, western Canada.

Lastly, a good number of migrants have the potential to breed within the AOC once conditions improve (habitat which is currently not present is created or ecosystem function of existing habitats is restored), offering a window of potential for restoration planning (very helpful for maximizing the effective use/positive results of a restoration project).

Comment 41 – Section 5 - Recommendations - 2nd sentence - Unclear what "occurrence" is being referred to here.

Response 1 – Agreed. I have made clarifications in the report.